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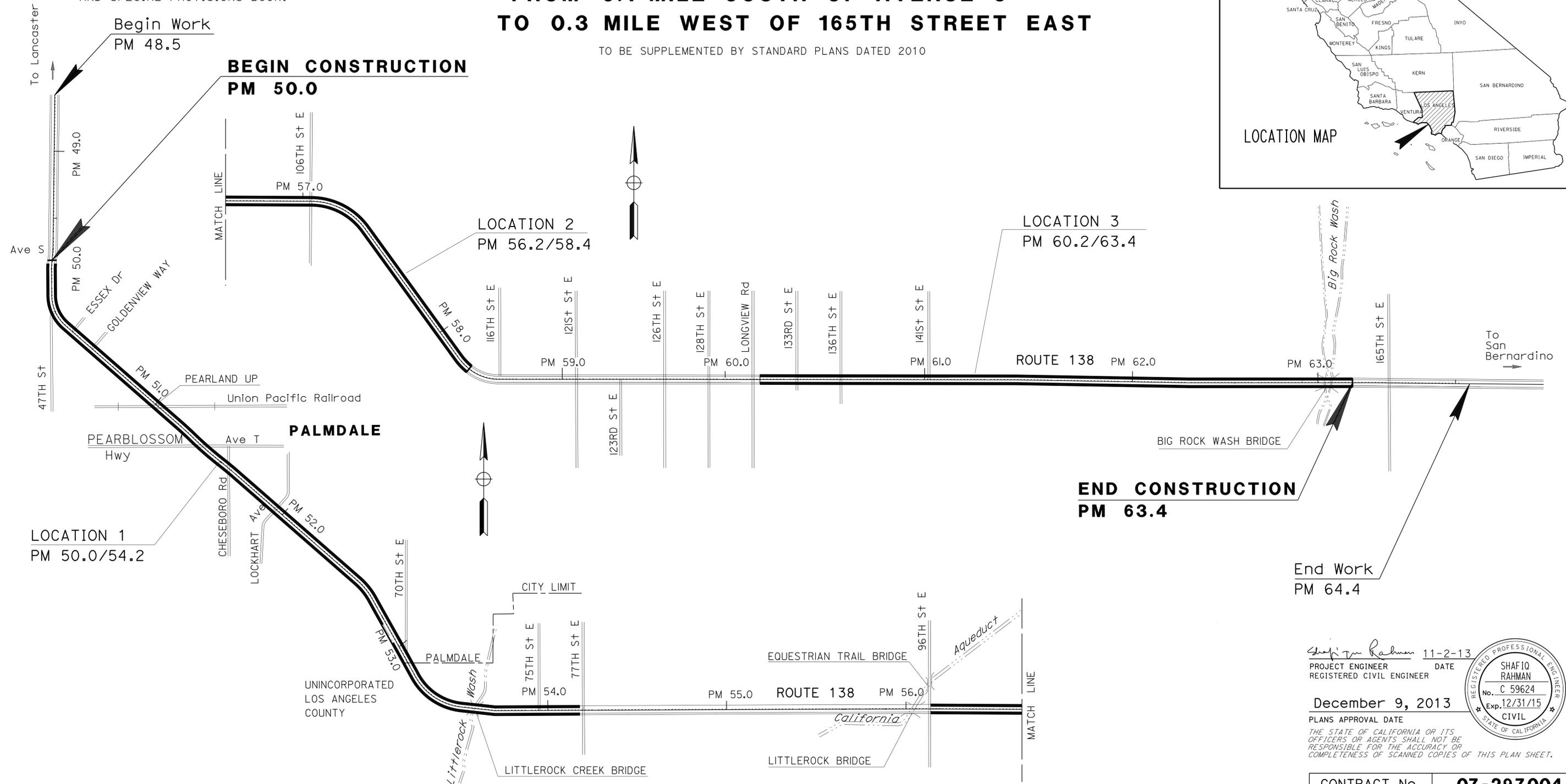
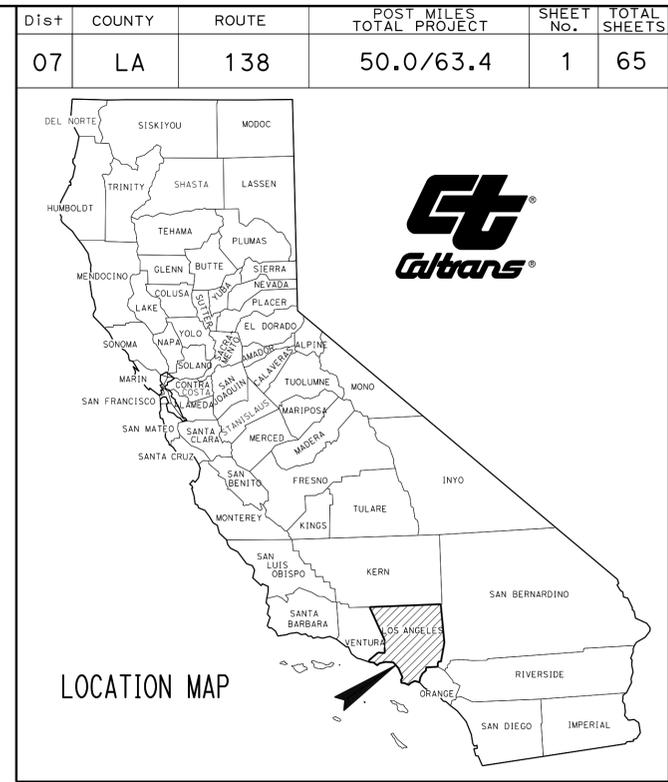
THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

STATE OF CALIFORNIA  
**DEPARTMENT OF TRANSPORTATION**

ACNHP-P138(047)E

**PROJECT PLANS FOR CONSTRUCTION ON  
 STATE HIGHWAY  
 IN LOS ANGELES COUNTY  
 IN AND NEAR PALMDALE  
 FROM 0.1 MILE SOUTH OF AVENUE S  
 TO 0.3 MILE WEST OF 165TH STREET EAST**

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010



PROJECT MANAGER	ASHRAF HABBAB
DESIGN ENGINEER	SHAFIQ RAHMAN

PROJECT ENGINEER *Shafiq Rahman* 11-2-13 DATE  
 REGISTERED CIVIL ENGINEER

December 9, 2013 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

DATE PLOTTED => 14-JAN-2014 TIME PLOTTED => 12:25

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN

FUNCTIONAL SUPERVISOR: CHARLES TON  
 CALCULATED/DESIGNED BY: LEOPOLDO DECENA  
 CHECKED BY: SHAFIQ RAHMAN  
 REVISED BY: LEOPOLDO DECENA  
 DATE REVISED: SHAFIQ RAHMAN

**NOTE:**  
 CURB RAMP LOCATIONS WILL BE DETERMINED BY THE ENGINEER.

**LEGEND:**  
**CURB RAMP POSITION**  
 a : NORTHEAST CORNER  
 b : NORTHWEST CORNER  
 c : SOUTHWEST CORNER  
 d : SOUTHEAST CORNER

**LOCATIONS OF CURB RAMP**

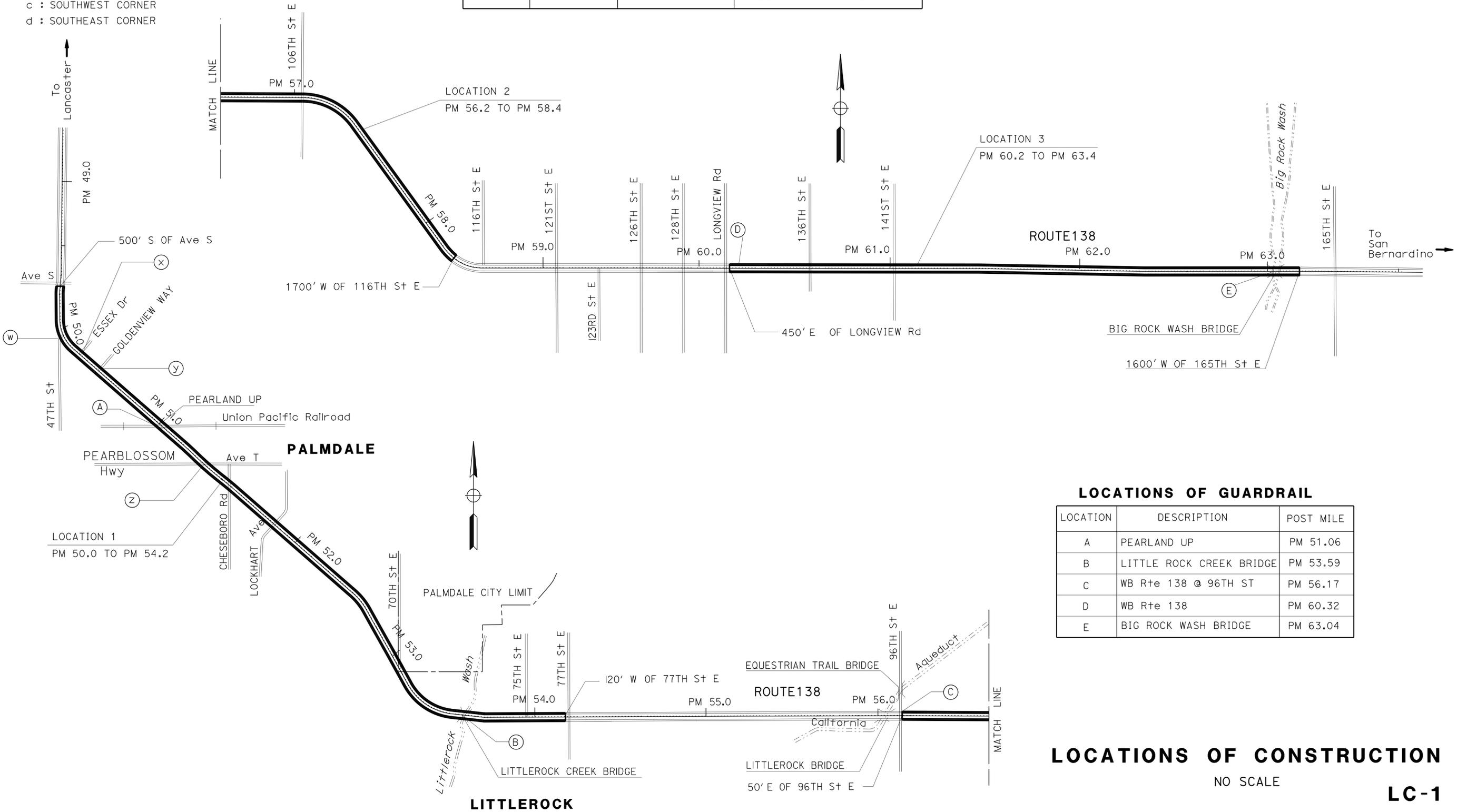
LOCATION	POST MILE	CROSS STREET	CURB RAMP
w	PM 50.28	47TH ST	b & c CASE A, Det A
x	PM 50.41	ESSEX Dr	a CASE B Det A & d CASE C
y	PM 50.58	GOLDENVIEW WAY	a & d CASE C
z	PM 51.41	Ave T	a SEE Const Det SHEETS b CASE C c SEE Const Det SHEETS d SEE Const Det SHEETS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	2	65

REGISTERED CIVIL ENGINEER: SHAFIQ RAHMAN  
 No. C 59624  
 Exp 12/31/15  
 CIVIL  
 REGISTERED PROFESSIONAL ENGINEER  
 STATE OF CALIFORNIA

11-2-13 DATE  
 12-9-13 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



**LOCATIONS OF GUARDRAIL**

LOCATION	DESCRIPTION	POST MILE
A	PEARLAND UP	PM 51.06
B	LITTLE ROCK CREEK BRIDGE	PM 53.59
C	WB Rte 138 @ 96TH ST	PM 56.17
D	WB Rte 138	PM 60.32
E	BIG ROCK WASH BRIDGE	PM 63.04

**LOCATIONS OF CONSTRUCTION**

NO SCALE

**LC-1**

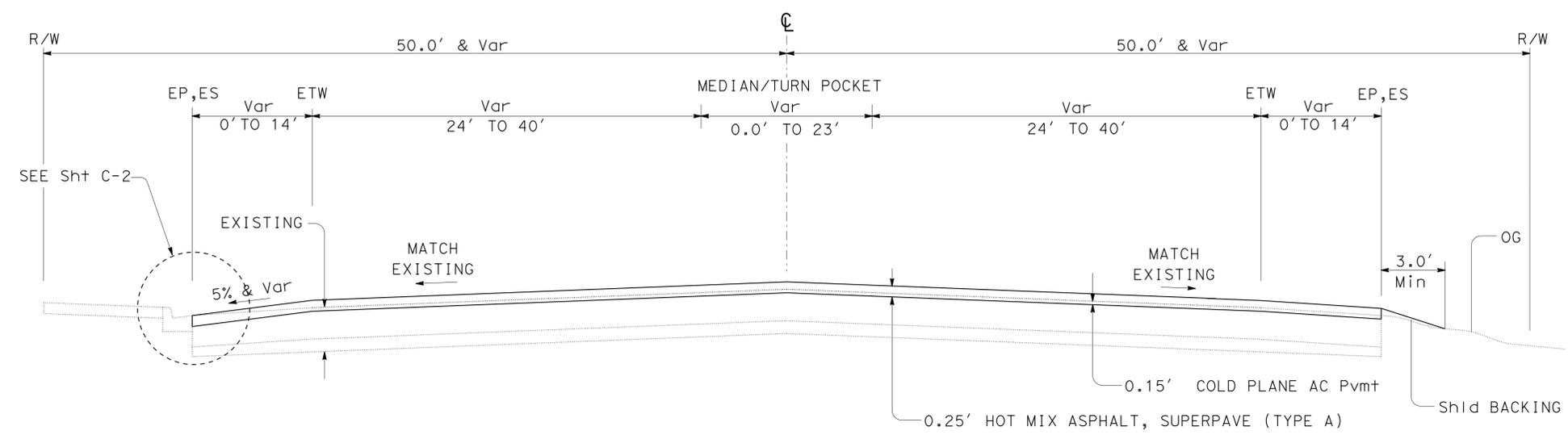
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	3	65

11-2-13  
 REGISTERED CIVIL ENGINEER DATE  
 12-9-13  
 PLANS APPROVAL DATE

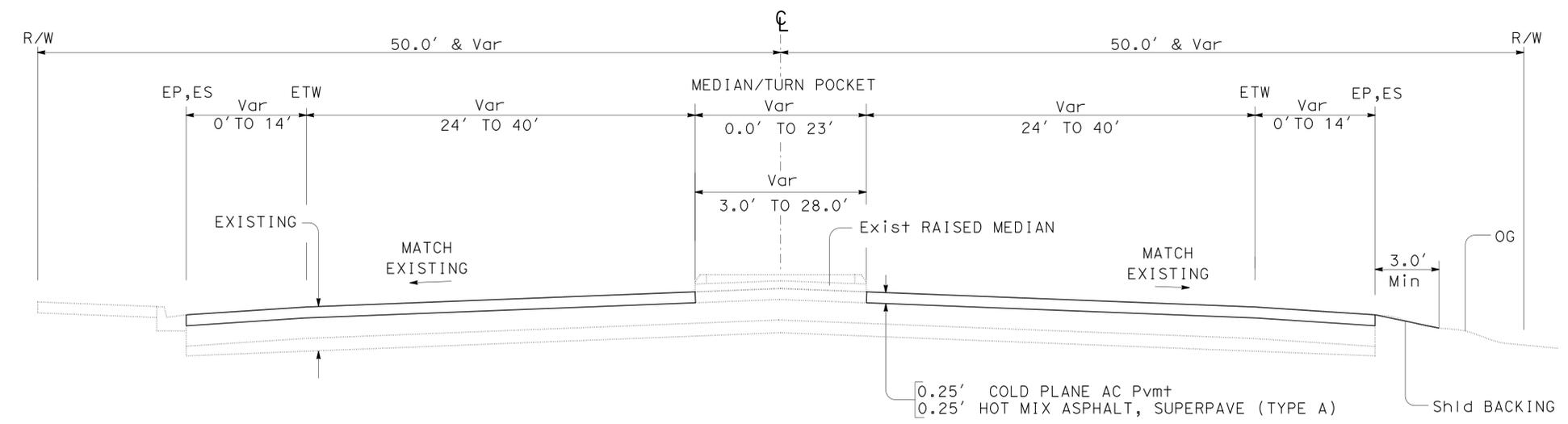
REGISTERED PROFESSIONAL ENGINEER  
 SHAFIQ RAHMAN  
 No. C 59624  
 Exp. 12/31/15  
 CIVIL  
 STATE OF CALIFORNIA

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- NOTES:**
1. DIMENSIONS OF THE PAVEMENT STRUCTURES ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
  2. SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER.
  3. DO NOT COLD PLANE OR PLACE HOT MIX ASPHALT, SUPERPAVE (TYPE A) ON Conc PAVEMENT, BRIDGE DECKS, AND CURBS AND GUTTERS.
  4. SEE CONSTRUCTION DETAILS SHEETS FOR LOCATIONS OF REPLACE AC SURFACING.



WESTBOUND PM 50.30 TO 50.70 EASTBOUND



WESTBOUND PM 50.00 TO 50.30 EASTBOUND

**ROUTE 138**

PAVEMENT CLIMATE REGION  
DESERT

EXISTING PAVEMENT SECTIONS

- PM 50.0 TO 51.9 [Exist 0.25' AC, 0.5' CTB, 0.17' AB]
- PM 51.9 TO 52.9 [Exist 1.0' AC (TYPE A), 0.3' AC (CLASS 3)]
- PM 52.9 TO 54.2 [Exist 0.7' AC, 0.75' AB]
- PM 56.2 TO 58.5 [Exist 1.0' AC (TYPE A), 0.3' AB (CLASS 3)]
- PM 60.2 TO 63.7 [Exist 1.0' AC, 0.3' AB (CLASS 3)]

**TYPICAL CROSS SECTIONS**

NO SCALE

**X-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN

FUNCTIONAL SUPERVISOR CHARLES TON

ALVIN AU SHAFIQ RAHMAN

REVISOR BY DATE

CALCULATED/DESIGNED BY CHECKED BY

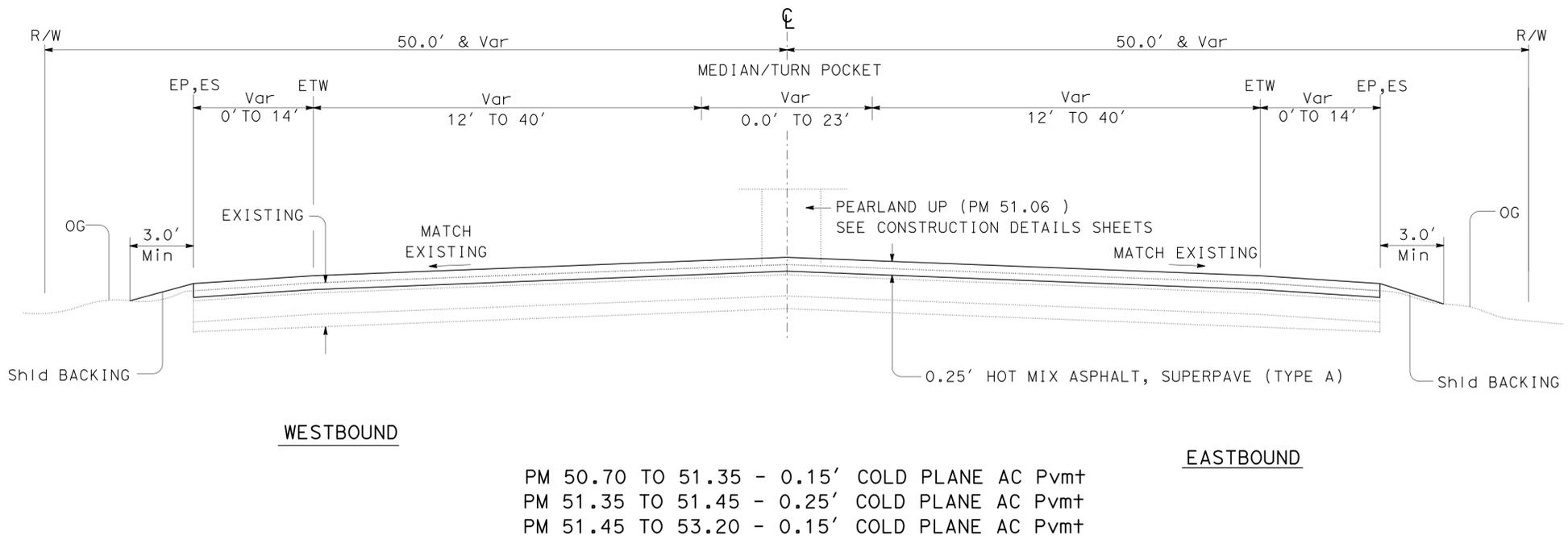
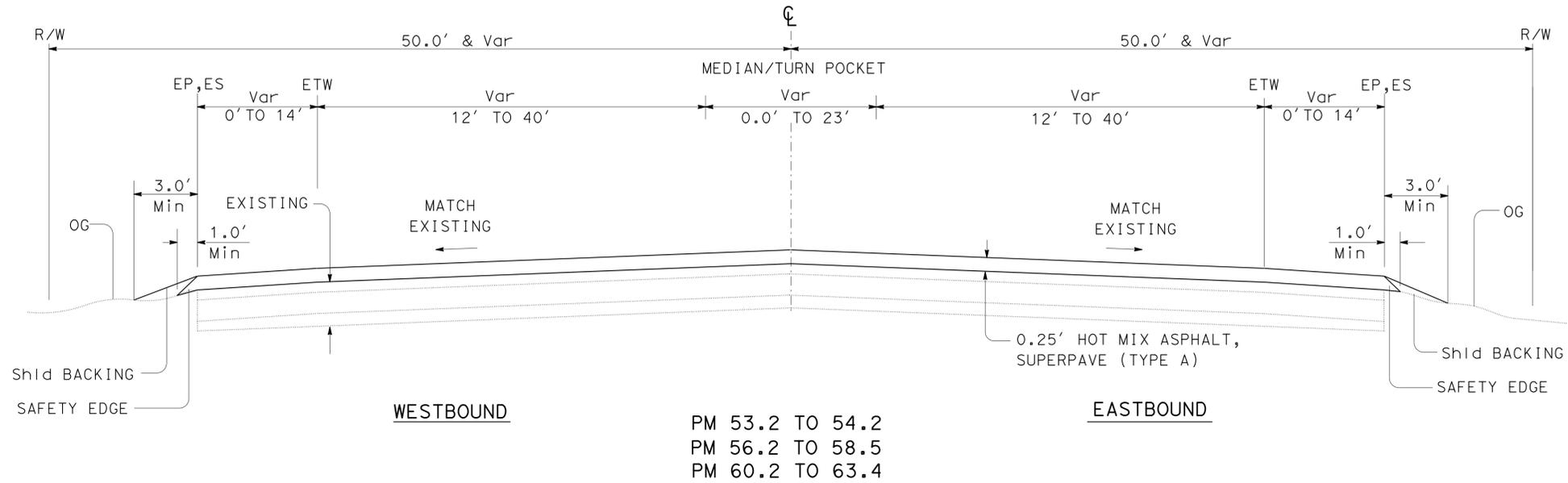
LAST REVISION DATE PLOTTED => 14-JAN-2014  
00-00-00 TIME PLOTTED => 12:25

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	4	65

11-2-13  
 REGISTERED CIVIL ENGINEER DATE  
 12-9-13  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 SHAFIQ RAHMAN  
 No. C 59624  
 Exp 12/31/15  
 CIVIL  
 STATE OF CALIFORNIA

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**ROUTE 138**

**TYPICAL CROSS SECTIONS**

NO SCALE

**X-2**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN
FUNCTIONAL SUPERVISOR	CHARLES TON
CALCULATED/DESIGNED BY	CHECKED BY
ALVIN AU	SHAFIQ RAHMAN
REVISOR	DATE
REVISOR	DATE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	5	65

<i>Shafiq Rahman</i> 11-2-13 REGISTERED CIVIL ENGINEER DATE	
12-9-13	PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER <b>SHAFIQ RAHMAN</b> No. C 59624 Exp. 12/31/15 CIVIL STATE OF CALIFORNIA
--

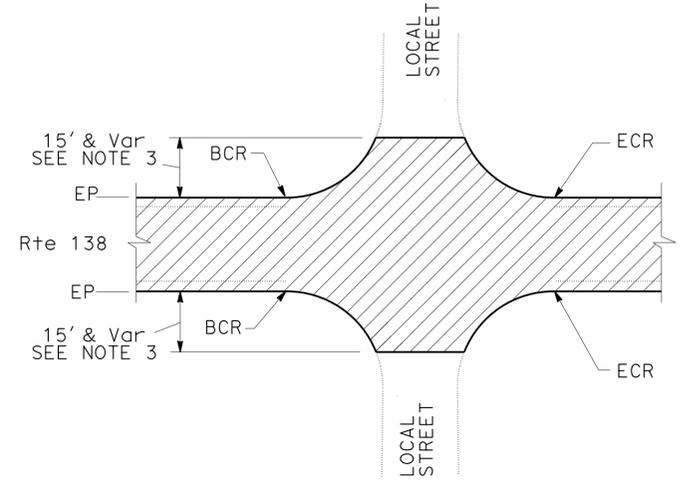
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTES:**

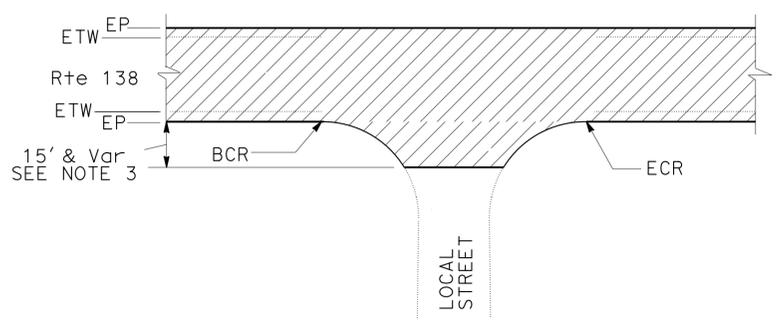
1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
2. EXISTING DRAINAGE INLETS HAVE NOT BEEN PLOTTED ON THESE PLANS.
3. EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER.
4. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.

**LEGEND:**

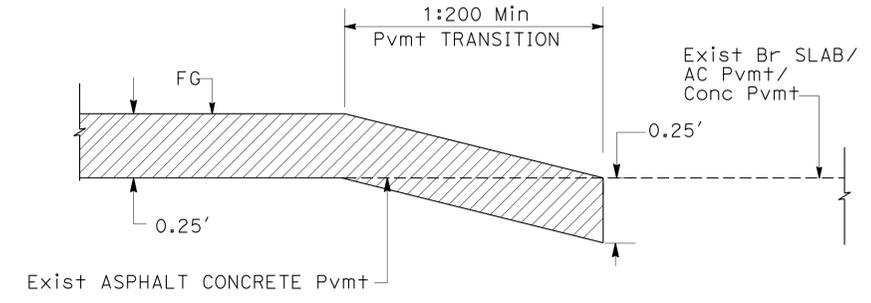
-  HOT MIX ASPHALT, SUPERPAVE (TYPE A)
-  0.92' HOT MIX ASPHALT, SUPERPAVE (TYPE A)



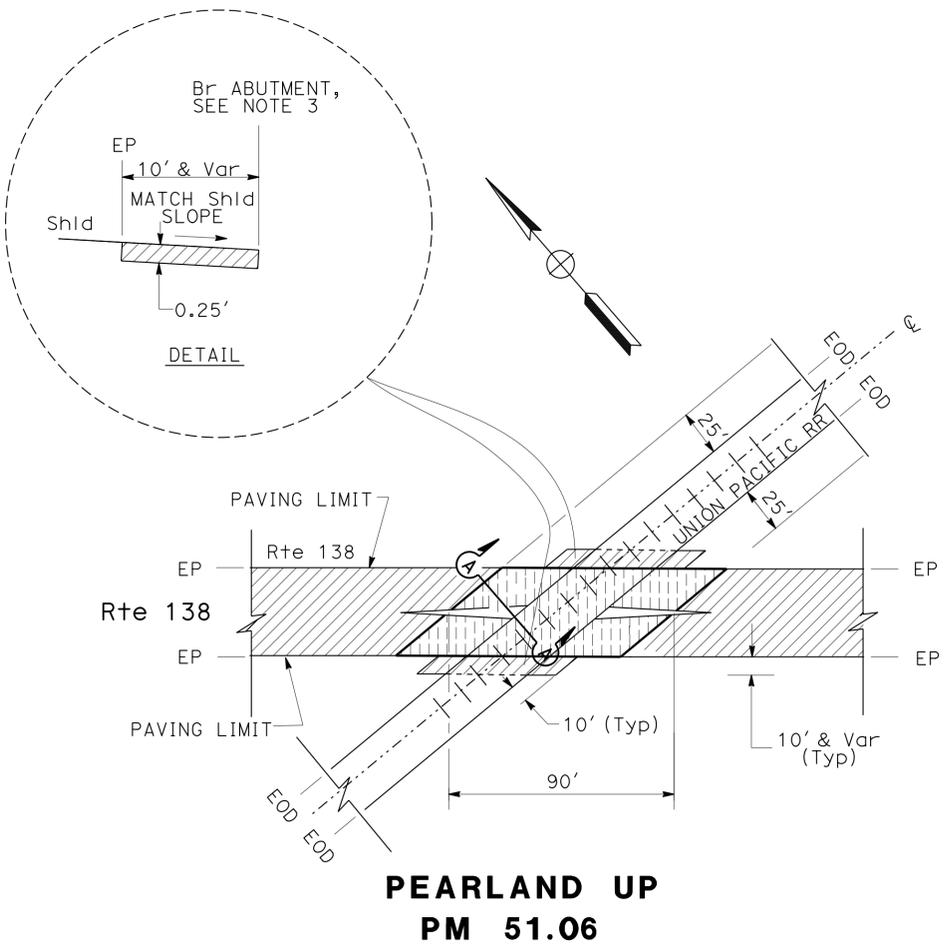
**PAVING LIMITS AT FOUR-LEG INTERSECTION**



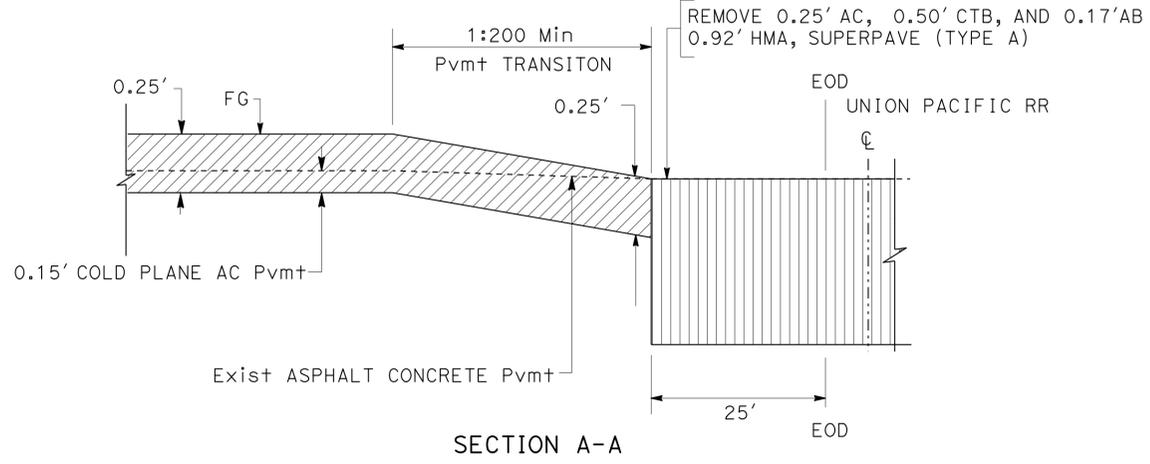
**PAVING LIMITS AT THREE-LEG INTERSECTION**



**TYPICAL LONGITUDINAL TRANSITION**



**PEARLAND UP PM 51.06**



**SECTION A-A LONGITUDINAL TRANSITION, PEARLAND UP (Typ)**

**CONSTRUCTION DETAILS**

NO SCALE

**C-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 FUNCTIONAL SUPERVISOR: CHARLES TON  
 CALCULATED/DESIGNED BY: ALVIN AU  
 CHECKED BY: SHAFIQ RAHMAN  
 REVISED BY: ALVIN AU  
 DATE REVISED: SHAFIQ RAHMAN

LAST REVISION | DATE PLOTTED => 14-JAN-2014  
 00-00-00 | TIME PLOTTED => 12:25

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	6	65

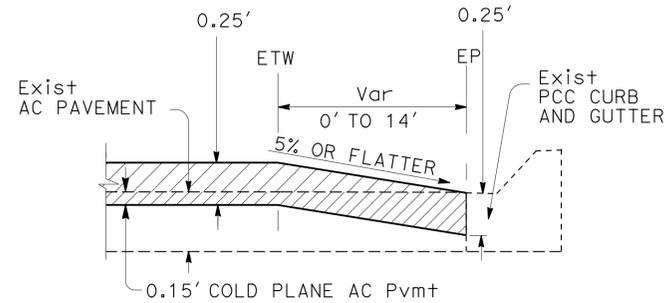
11-2-13  
 REGISTERED CIVIL ENGINEER DATE  
 12-9-13  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 SHAFIQ RAHMAN  
 No. C 59624  
 Exp. 12/31/15  
 CIVIL  
 STATE OF CALIFORNIA

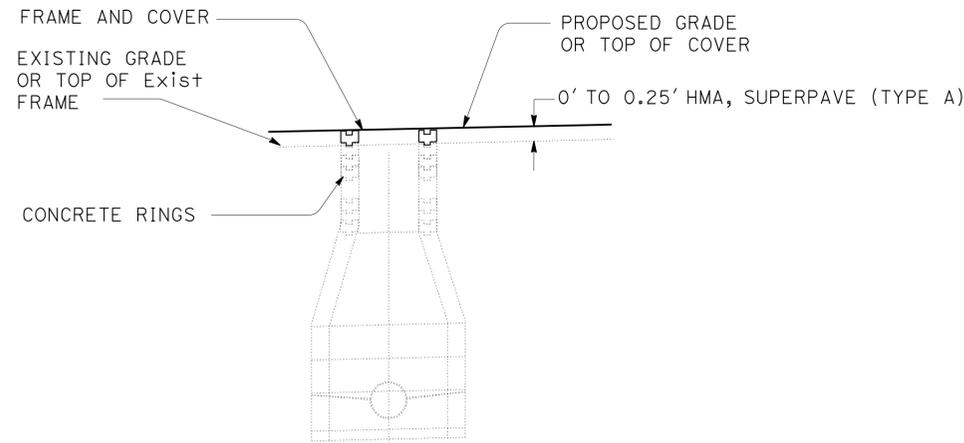
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**NOTES:**

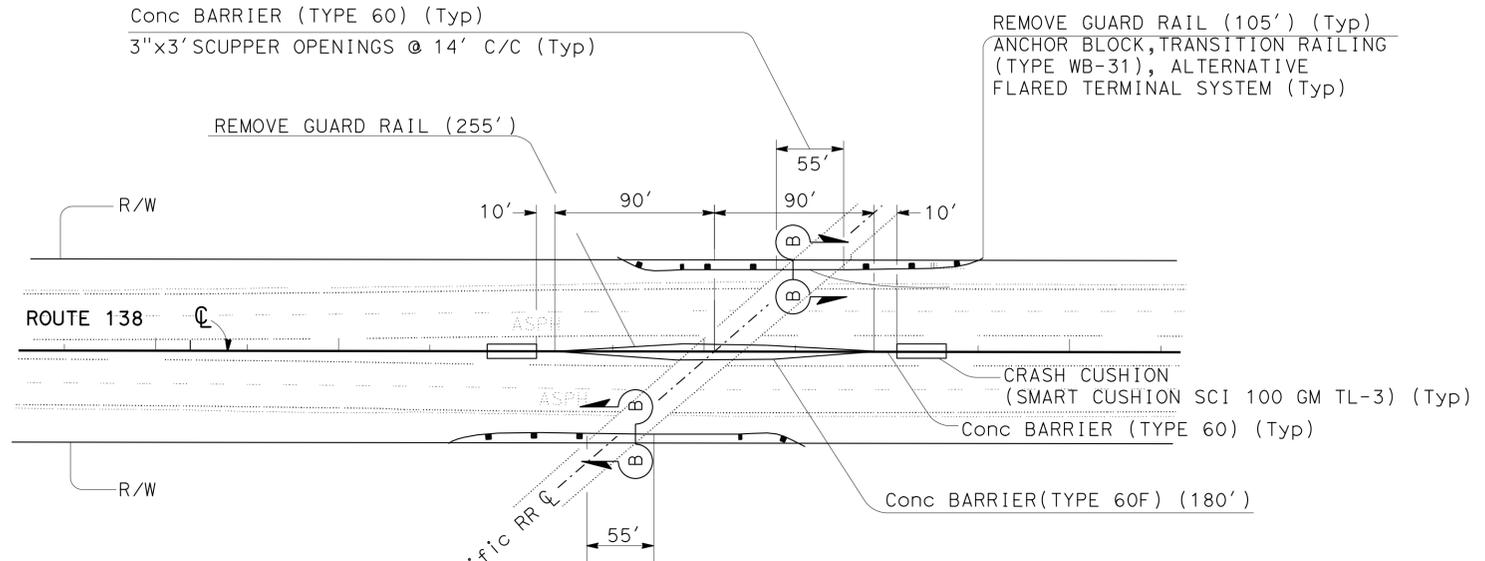
1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
2. EXISTING DRAINAGE INLETS HAVE NOT BEEN PLOTTED ON THESE PLANS.
3. EXACT LOCATION WILL BE DETERMINED BY THE ENGINEER.
4. SEE Sh+ C-5 FOR DETAILS OF ANCHOR BLOCK.
5. SEE Sh+ C-3 FOR CRASH CUSHION DETAIL.
6. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.



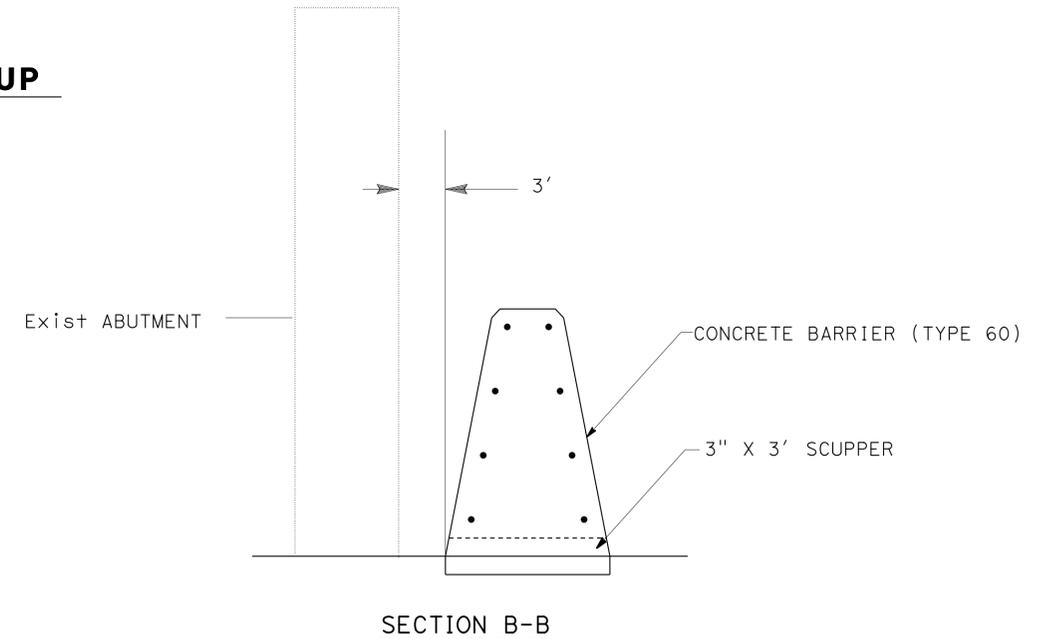
**TYPICAL AC TRANSITION TO CONFORM AT PCC CURB AND GUTTER**



**ADJUST FRAME AND COVER TO GRADE**



**PEARLAND UP PM 51.06**



**SECTION B-B**

**CONSTRUCTION DETAILS**

NO SCALE

**C-2**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	8	65

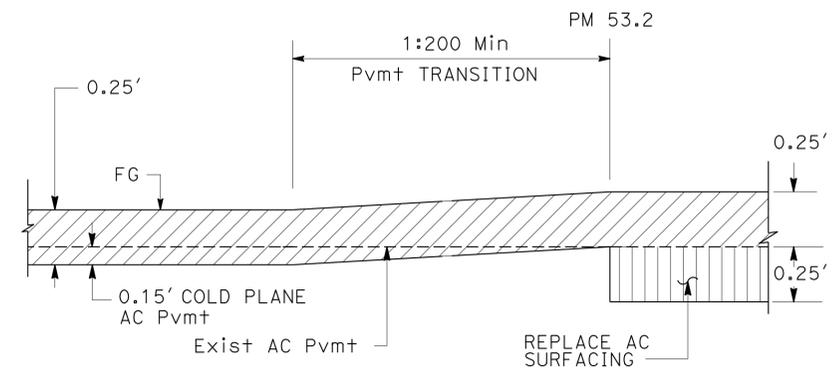
<i>Shafiq Rahman</i> 11-2-13 REGISTERED CIVIL ENGINEER DATE		
12-9-13 PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>		

**NOTES:**

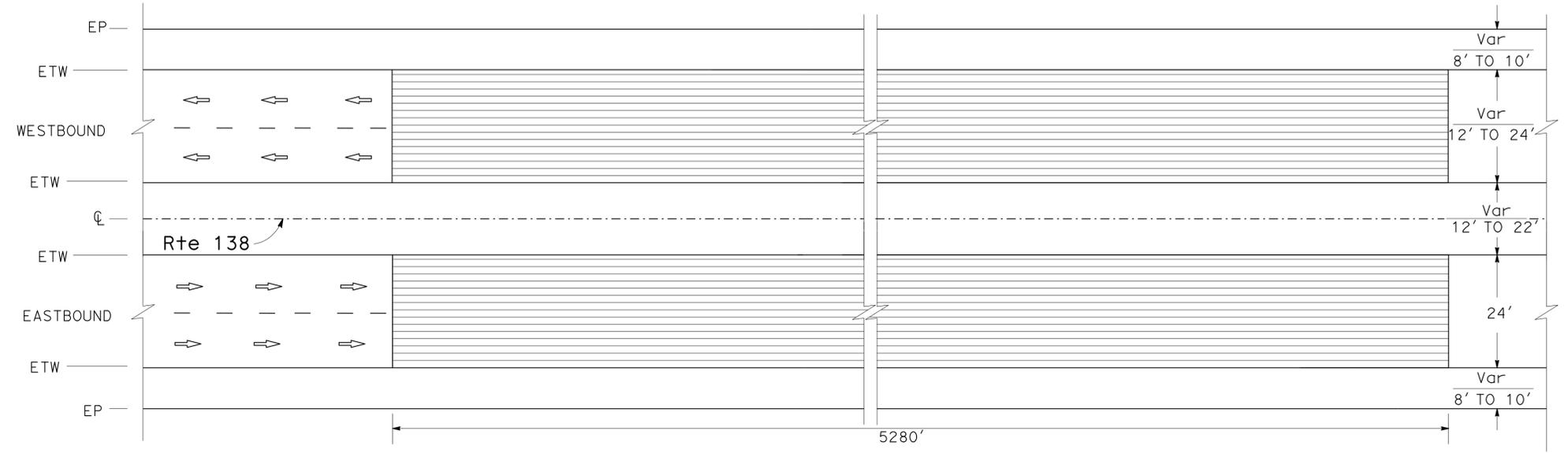
- 0.25' HMA, SUPERPAVE (TYPE A).
- SEAL CRACKS GREATER THAN 1/4" WITH HOT APPLIED CRACK SEALANT.
- THE EXACT LOCATIONS OF AC REPLACEMENT WILL BE DETERMINED BY THE ENGINEER.
- EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.

**LEGEND:**

- REPLACE ASPHALT CONCRETE SURFACING
- DIRECTION OF TRAVEL

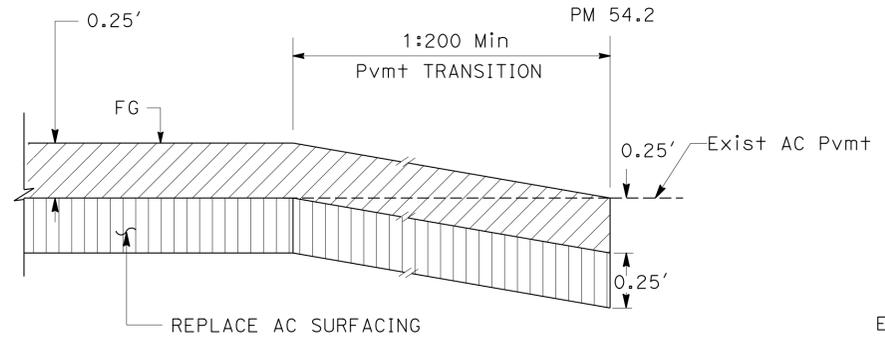


**TYPICAL LONGITUDINAL TRANSITION  
AC TO AC PAVEMENT - PM 53.2**

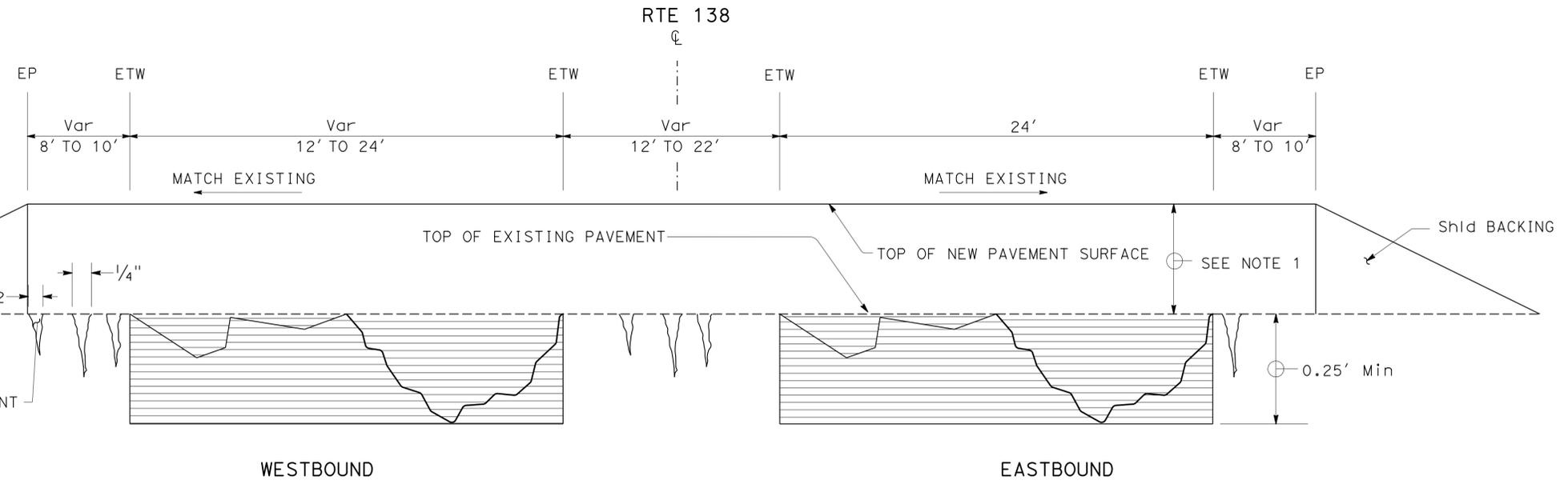


**REPLACE ASPHALT CONCRETE SURFACING (SEE NOTE 3)**

PM 53.2 TO 54.2



**TYPICAL LONGITUDINAL TRANSITION  
AC TO AC PAVEMENT - PM 54.2**



**CROSS SECTION**

**CONSTRUCTION DETAILS**

NO SCALE

**C-4**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN

REVISOR BY  
 DATE

ALVIN AU  
 SHAFIQ RAHMAN

CALCULATED-DESIGNED BY  
 CHECKED BY

FUNCTIONAL SUPERVISOR  
 CHARLES TON

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	9	65

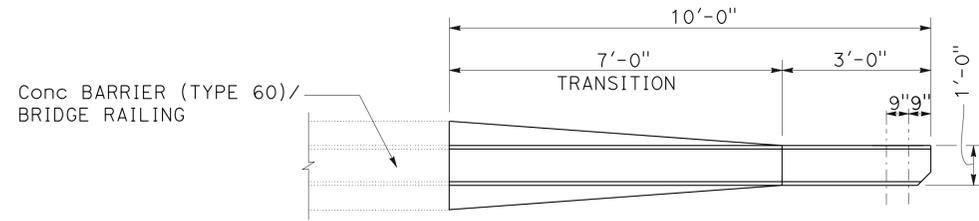
REGISTERED CIVIL ENGINEER	DATE
11-2-13	
REGISTERED CIVIL ENGINEER	DATE
12-9-13	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
SHAFIQ RAHMAN
No. C 59624
Exp 12/31/15
CIVIL
STATE OF CALIFORNIA

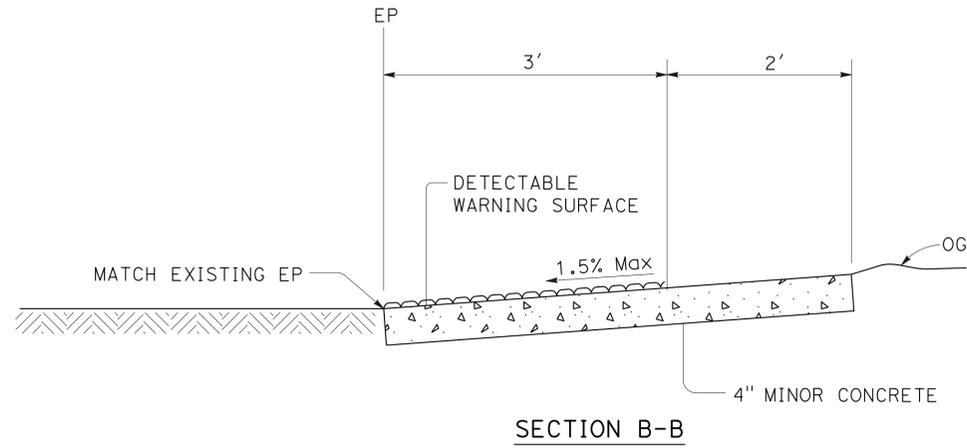
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTE:**  
EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.

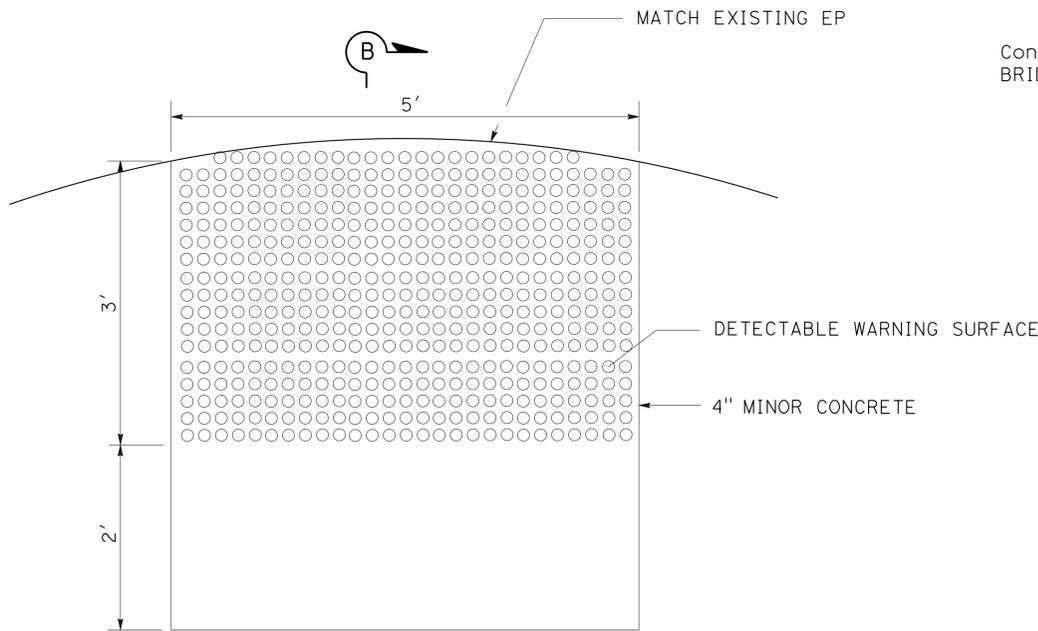


PLAN

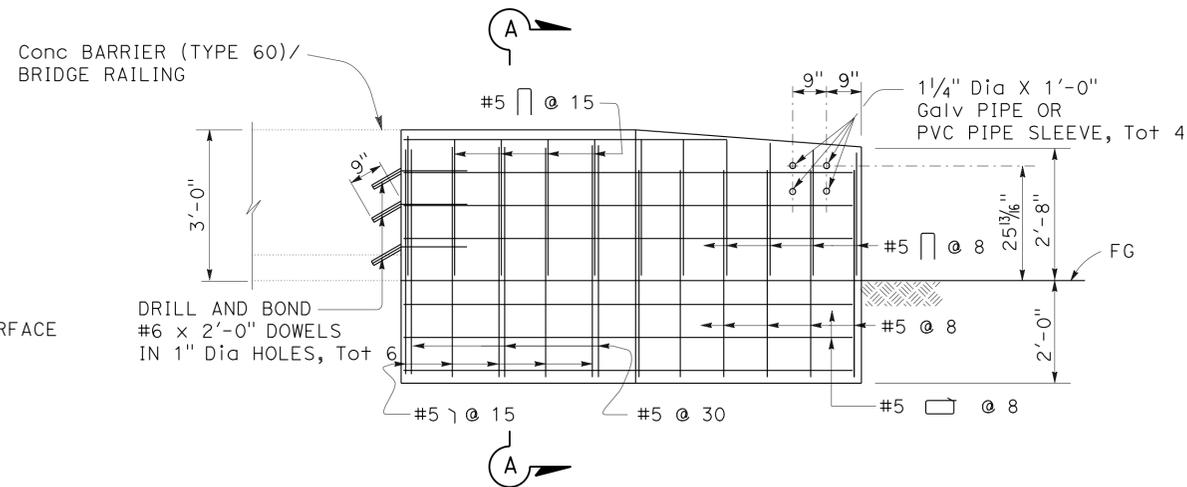
**LOCATIONS: 1. PEARLAND UP (4 EA)  
2. LITTLE ROCK CREEK BRIDGE (4 EA)**



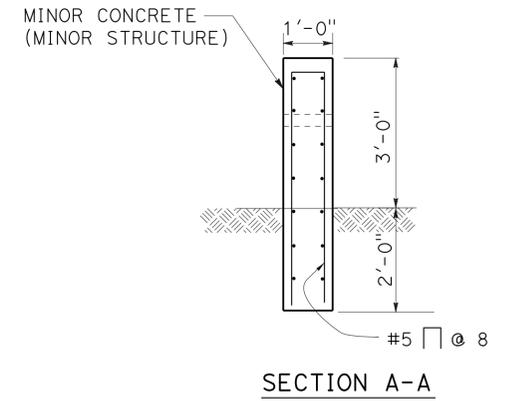
SECTION B-B



**LOCATION Z CURB RAMPS a,c AND d**



ELEVATION  
**ANCHOR BLOCK**



SECTION A-A

**CONSTRUCTION DETAILS**  
NO SCALE

**C-5**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
DESIGN  
FUNCTIONAL SUPERVISOR: CHARLES TON  
CALCULATED/DESIGNED BY: ALVIN AU  
CHECKED BY: SHAFIQ RAHMAN  
REVISOR: ALVIN AU  
DATE: 7/2/2010

USERNAME => s125624  
DGN FILE => 729700ga005.dgn

RELATIVE BORDER SCALE  
1/8" = 1'-0"



UNIT 1807

PROJECT NUMBER & PHASE

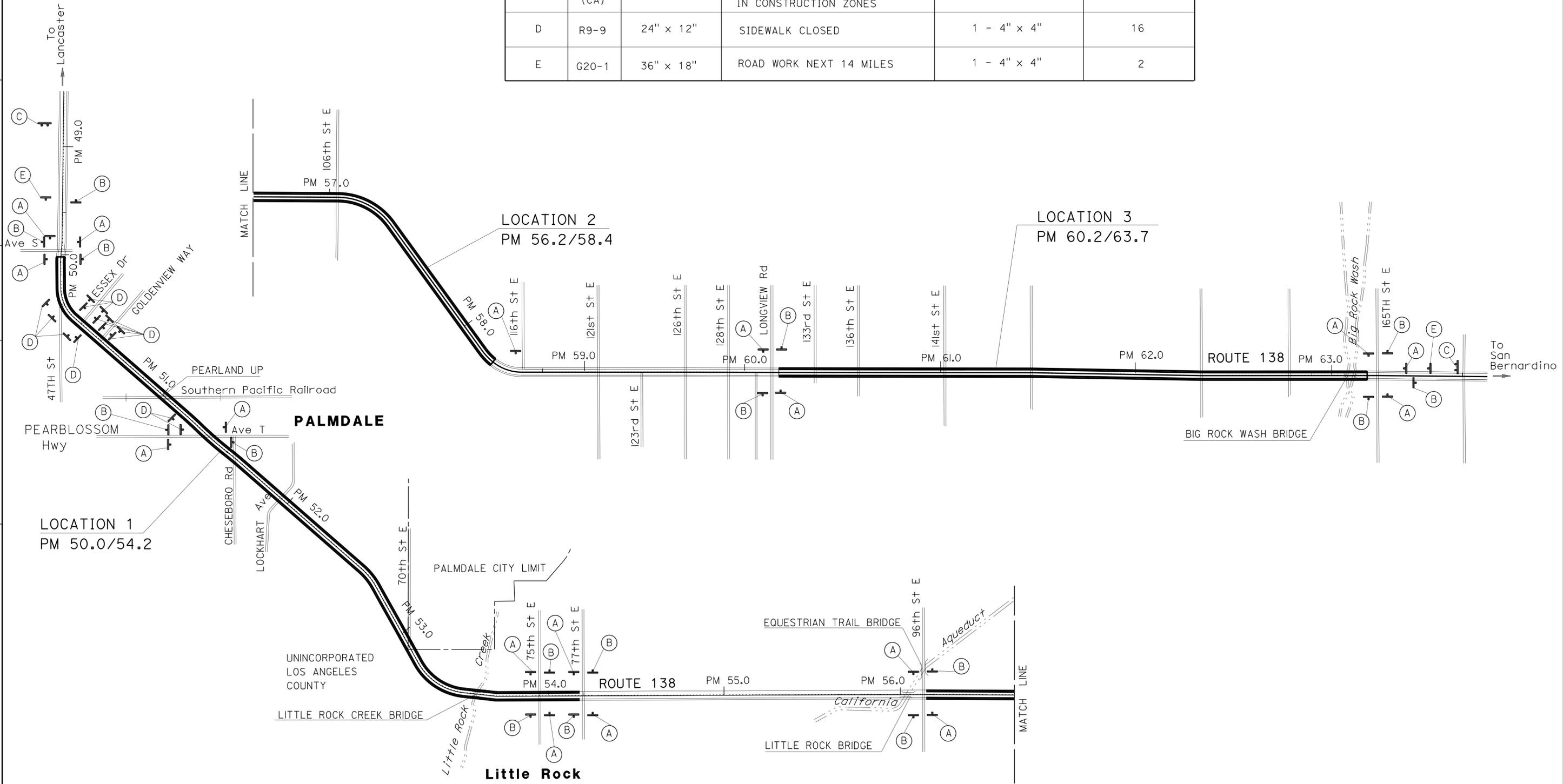
0713001001

LAST REVISION: DATE PLOTTED => 14-JAN-2014  
00-00-00 TIME PLOTTED => 12:25

**NOTES:**

- "TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONES" SIGNS WILL BE PLACED 500 FEET IN ADVANCE OF "ROAD WORK AHEAD" SIGNS OR AS DETERMINED BY THE ENGINEER.
- LOCATIONS OF CONSTRUCTION AREA SIGNS AS SHOWN ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER.

STATIONARY MOUNTED CONSTRUCTION AREA SIGNS					
SIGN No. (X)	SIGN CODE	PANEL SIZE	SIGN MESSAGE	NUMBER OF POSTS AND SIZE	NUMBER OF SIGNS
A	W20-1	36" x 36"	ROAD WORK AHEAD	1 - 4" x 4"	17
B	G20-2	36" x 18"	END ROAD WORK	1 - 4" x 4"	16
C	C40 (CA)	108" x 42"	TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONES	2 - 6" x 6"	2
D	R9-9	24" x 12"	SIDEWALK CLOSED	1 - 4" x 4"	16
E	G20-1	36" x 18"	ROAD WORK NEXT 14 MILES	1 - 4" x 4"	2



**CONSTRUCTION AREA SIGNS**  
NO SCALE  
**CS-1**

STATE OF CALIFORNIA -- DEPARTMENT OF TRANSPORTATION -- DESIGN  
 FUNCTIONAL SUPERVISOR CHARLES TON  
 CALCULATED/DESIGNED BY CHECKED BY  
 ALVIN AU SHAFIQ RAHMAN  
 REVISED BY DATE REVISED

LAST REVISION DATE PLOTTED => 14-JAN-2014  
 8-24-11 TIME PLOTTED => 12:25

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	11	65

11-2-13  
 REGISTERED CIVIL ENGINEER DATE  
 12-9-13  
 PLANS APPROVAL DATE

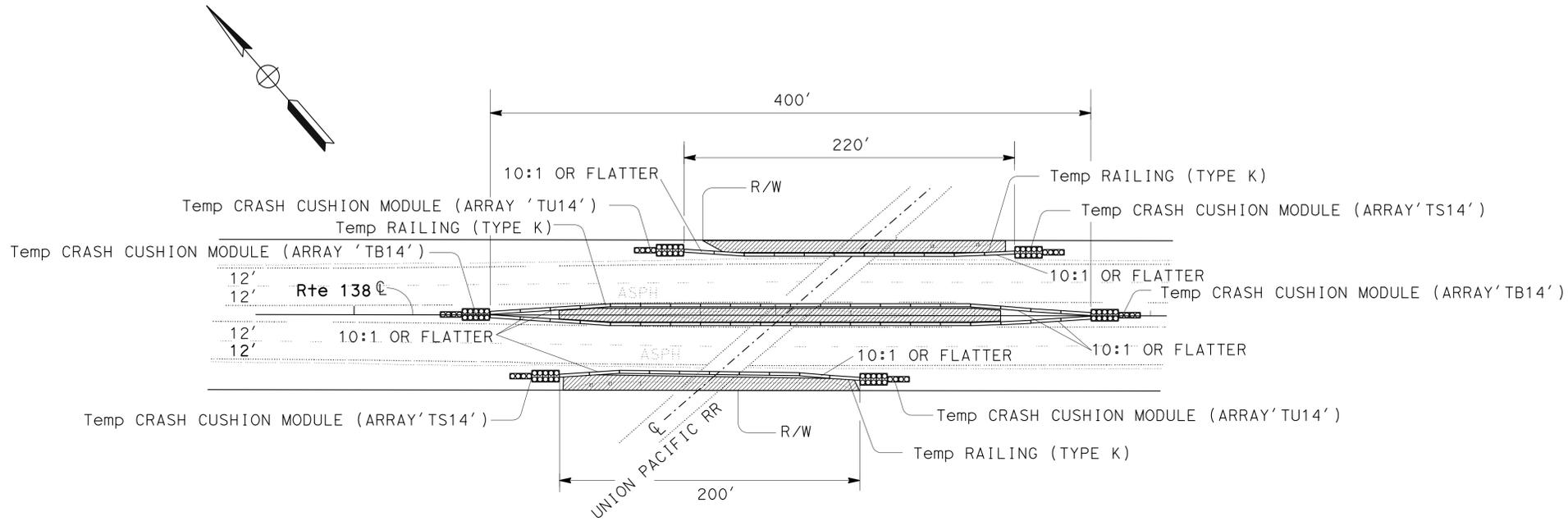
SHAFIQ RAHMAN  
 No. C 59624  
 Exp 12/31/15  
 CIVIL

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 OR AGENTS SHALL NOT BE RESPONSIBLE FOR  
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 COPIES OF THIS PLAN SHEET.

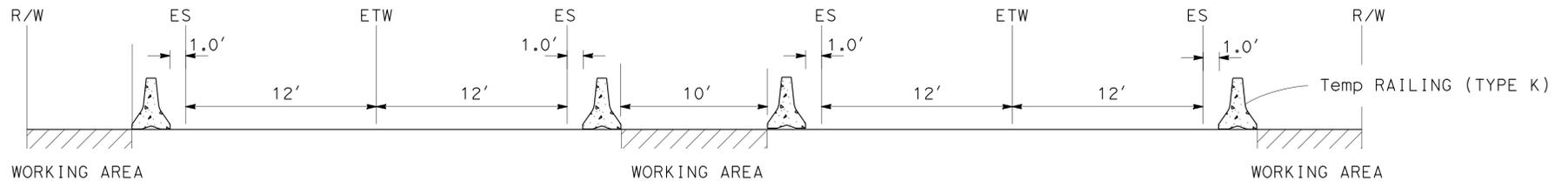
**NOTES:**

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- EXISTING DRAINAGE INLETS HAVE NOT BEEN PLOTTED ON THESE PLANS.
- EXACT LOCATION OF Temp RAILING (TYPE K) WILL BE DETERMINED BY THE ENGINEER.

**LEGEND:**



**PEARLAND UP  
PM 51.06**



**TYPICAL SECTION**

TRAFFIC HANDLING QUANTITIES		
Temp CRASH CUSHION MODULE	EA	84
Temp RAILING (TYPE K)	LF	1220

**TRAFFIC HANDLING PLAN**  
NO SCALE

**TH-1**

APPROVED FOR TRAFFIC HANDLING WORK ONLY.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 DESIGN  
 FUNCTIONAL SUPERVISOR CHARLES TON  
 CALCULATED/DESIGNED BY CHECKED BY  
 ALVIN AU SHAFIQ RAHMAN  
 REVISED BY DATE  
 REVISIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	13	65

11-2-13  
 REGISTERED CIVIL ENGINEER DATE  
 12-9-13  
 PLANS APPROVAL DATE

SHAFIQ RAHMAN  
 No. C 59624  
 Exp. 12/31/15  
 CIVIL

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LOCATION/ POST MILE	STREET	COLD PLANE ASPHALT CONCRETE PAVEMENT	HOT MIX ASPHALT, SUPERPAVE (TYPE A)	TACK COAT	MINOR CONCRETE (CURB, SIDEWALK AND CURB RAMP)	REMOVE CONCRETE (CURB, GUTTER AND SIDEWALK)	REPLACE ASPHALT CONCRETE SURFACING	DETECTABLE WARNING SURFACE	ROADWAY EXCAVATION	PRE/POST Const SURVEYS	ADJUST MANHOLE TO GRADE	ADJUST WATER VALVE COVER TO GRADE	SHOULDER BACKING
		SQYD	TON	TON	CY	CY	CY	SQFT	CY	EA	EA	EA	TON
PM 50.00 - PM 50.39	Ave S - ESSEX Dr	12,008	2,129	3.0	10.8	10.8		80		4	5	19	88
PM 50.39 - PM 51.57	ESSEX Dr - PEARBLOSSOM Hwy	50,090	8,878	11.9	9.2	7.2		120	3.0	3		2	500
PM 51.57 - PM 51.90	PEARBLOSSOM Hwy - 60TH St E	22,893	4,482	5.5								8	110
PM 51.90 - PM 52.90	60TH St E - 1.0 MI E 60TH St E	42,878	7,602	10.7								8	435
PM 52.90 - PM 54.20	1.0 MI E 60TH St E - 77TH St E	49,528	19,040	16.8			2,346					14	565
PM 56.20 - PM 58.50	96TH St E - 116TH St E		17,180	12.0							2	1	1,002
PM 60.20 - PM 63.40	LONGVIEW Rd - 165TH St E		25,589	18.0								3	1,525
TOTAL		177,397	84,900	77.9	20.0	18.0	2,346	200	3.0	7	7	55	4,226

LOCATION	DESCRIPTION	POST MILE	REMOVE GUARDRAIL	TREATED WOOD WASTE	REMOVE CRASH CUSHION (SAND FILLED)	MIDWEST GUARDRAIL SYSTEM (WOOD POST)	SINGLE THRIE BEAM BARRIER *	ALTERNATIVE FLARED TERMINAL SYSTEM	ALTERNATIVE INLINE TERMINAL SYSTEM	TRANSITION RAILING (TYPE WB-31)	TRANSITION RAILING (TYPE STB)	CRASH CUSHION (SMART CUSHION SCI 100 GM TL-3)	CRASH CUSHION MODULE (SAND FILLED)	Conc BARRIER (TYPE 60F)	Conc BARRIER (TYPE 60)	MINOR CONCRETE (MINOR STRUCTURE)	END ANCHOR ASSEMBLY (TYPE SFT)
			LF	LB	EA	LF	LF	EA	EA	EA	EA	EA	EA	EA	LF	LF	CY
(A)	PEARLAND UP	PM 51.06	465	6,719	2	150		4		4		2		180	130	12	
(B)	LITTLE ROCK CREEK BRIDGE	PM 53.59	475	6,807	2	200	340	4		4	4		28			14	
(C)	WB Rte 138 @ 96TH St	PM 56.17	225	3,271		150			2								
(D)	WB Rte 138	PM 60.32	76	1,238		50		1									1
(E)	BIG ROCK WASH BRIDGE	PM 63.04	900	12,818		750		4									
			2,141	30,853	4	1,300	340	13	2	8	4	2	28	180	130	26	1

\* FOR TYPICAL LAYOUT ON MEDIAN, SEE STANDARD PLAN RSP A78D1

**SUMMARY OF QUANTITIES**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 LEOPOLDO DEGENA  
 SHAFIQ RAHMAN  
 CHARLES TON  
 DESIGN

LAST REVISION DATE PLOTTED => 14-JAN-2014  
 00-00-00 TIME PLOTTED => 12:25





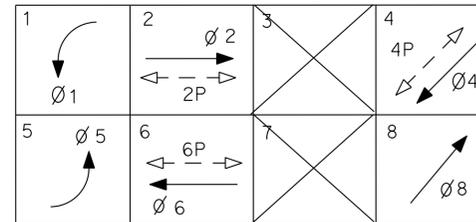
**NOTE:**

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**LEGEND: (THIS SHEET ONLY)**

- 1 EXISTING MODEL 170 CONTROLLER ASSEMBLY AND TYPE 332 CABINET.
- 2 EXISTING 120/240 V TYPE III-BF SERVICE EQUIPMENT ENCLOSURE. ENCLOSURE WITH:  
 100 A, 240 V, 2P, CB - MAIN  
 50 A, 120 V, 1P, CB - SIGNAL  
 15 A, 120 V, 1P, CB - FLASHING BEACON  
 15 A, 120 V, 1P, CB - IISNS (FUTURE)  
 30 A, 240 V, 2P, CB - LIGHTING.  
 C+id# 07-53-138-0-074.384M  
 ADDRESS: 5683 1/2 PEARBLOSSOM Hwy.
- 3 AB FOUNDATION.
- 4 RC EXISTING PEDESRIAN PUSH BUTTON. INSTALL NEW APS.

**EXISTING PHASE DIAGRAM**



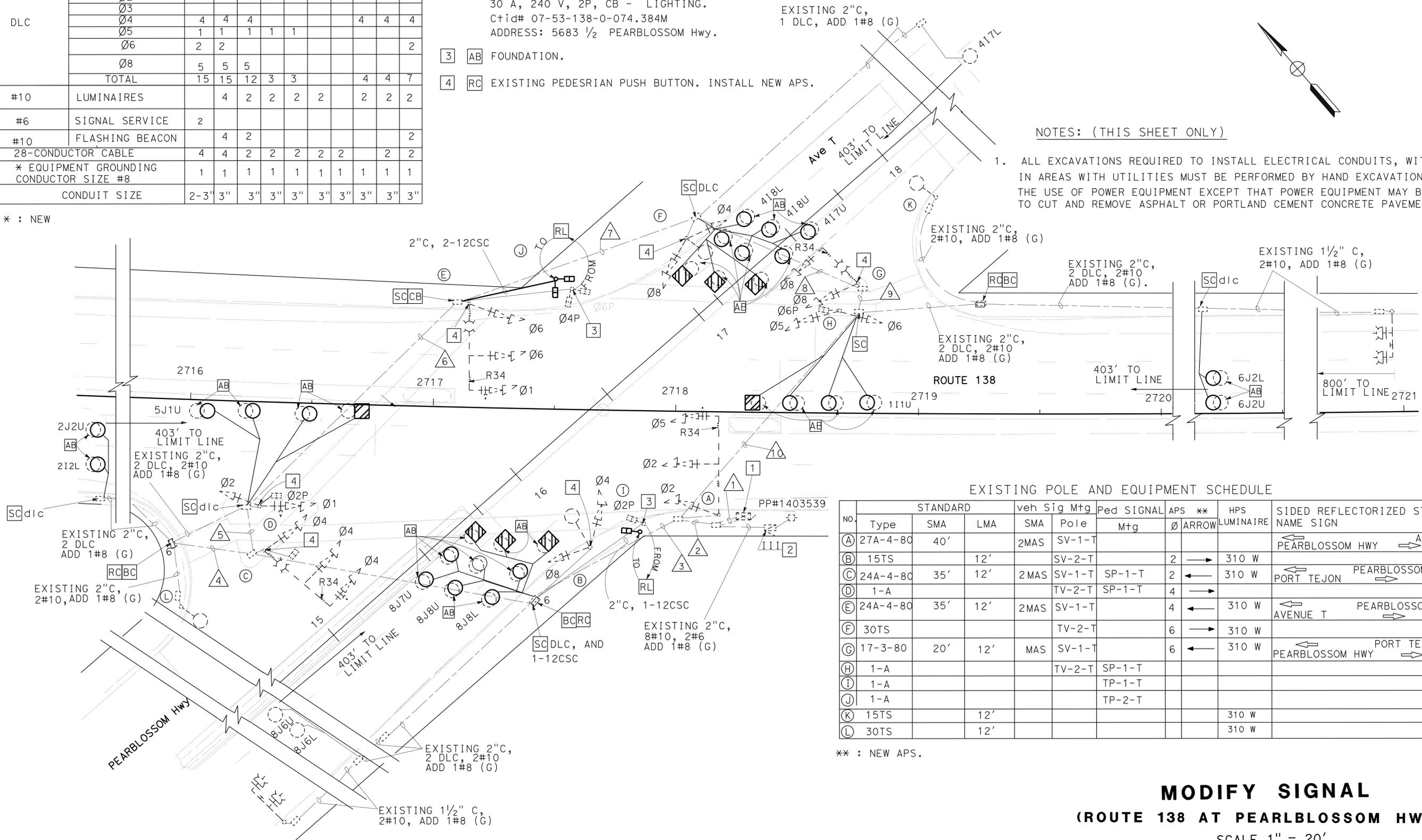
**EXISTING CONDUCTOR AND CONDUIT SCHEDULE**

AWG OR CABLE	CONDUCTOR RUN	1	2	3	4	5	6	7	8	9	10
DLC	Ø1	1									1
	Ø2	2	2	2	2						
	Ø3										
	Ø4	4	4	4					4	4	4
	Ø5	1	1	1	1	1					
	Ø6	2	2								2
	Ø8	5	5	5							
	TOTAL	15	15	12	3	3			4	4	7
#10	LUMINAIRES		4	2	2	2			2	2	2
#6	SIGNAL SERVICE	2									
#10	FLASHING BEACON		4	2							2
	28-CONDUCTOR CABLE	4	4	2	2	2	2	2	2	2	2
	* EQUIPMENT GROUNDING CONDUCTOR SIZE #8	1	1	1	1	1	1	1	1	1	1
	CONDUIT SIZE	2-3"	3"	3"	3"	3"	3"	3"	3"	3"	3"

\* : NEW

**NOTES: (THIS SHEET ONLY)**

- 1. ALL EXCAVATIONS REQUIRED TO INSTALL ELECTRICAL CONDUITS, WITHIN 49" IN AREAS WITH UTILITIES MUST BE PERFORMED BY HAND EXCAVATION WITHOUT THE USE OF POWER EQUIPMENT EXCEPT THAT POWER EQUIPMENT MAY BE USED TO CUT AND REMOVE ASPHALT OR PORTLAND CEMENT CONCRETE PAVEMENT.



**EXISTING POLE AND EQUIPMENT SCHEDULE**

NO.	Type	STANDARD		veh Sig Mtg		Ped SIGNAL Mtg	APS **	HPS LUMINAIRE	SIDED REFLECTORIZED STREET NAME SIGN
		SMA	LMA	SMA	Pole				
(A)	27A-4-80	40'		2MAS	SV-1-T		Ø ARROW		PEARBLOSSOM HWY AVENUE T
(B)	15TS		12'		SV-2-T		2	310 W	
(C)	24A-4-80	35'	12'	2MAS	SV-1-T	SP-1-T	2	310 W	PEARBLOSSOM HWY
(D)	1-A				TV-2-T	SP-1-T	4		PORT TEJON
(E)	24A-4-80	35'	12'	2MAS	SV-1-T		4	310 W	PEARBLOSSOM HWY AVENUE T
(F)	30TS				TV-2-T		6	310 W	
(G)	17-3-80	20'	12'	MAS	SV-1-T		6	310 W	PEARBLOSSOM HWY PORT TEJON
(H)	1-A				TV-2-T	SP-1-T			
(I)	1-A					TP-1-T			
(J)	1-A					TP-2-T			
(K)	15TS		12'					310 W	
(L)	30TS		12'					310 W	

\*\* : NEW APS.

**MODIFY SIGNAL  
(ROUTE 138 AT PEARBLOSSOM HWY)**

SCALE 1" = 20'

**E-2**

APPROVED FOR ELECTRICAL WORK ONLY



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	18	65

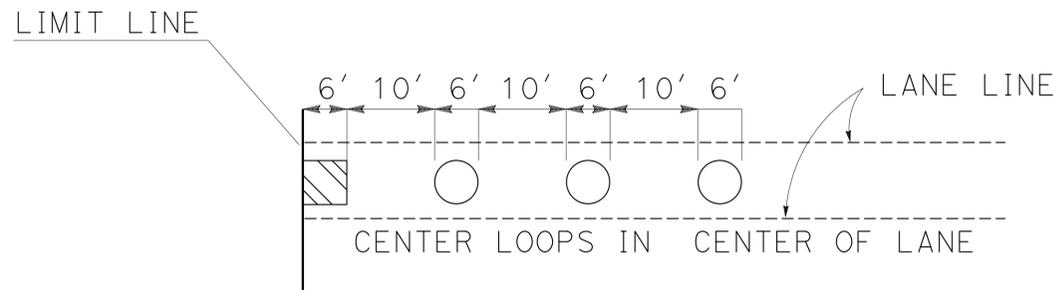
  

REGISTERED ELECTRICAL ENGINEER	DATE
<i>Jorge Fuentes</i>	
12-9-13	
PLANS APPROVAL DATE	

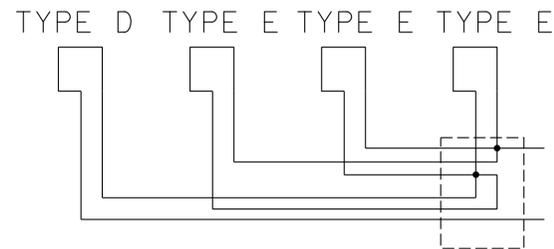
  

REGISTERED PROFESSIONAL ENGINEER
JORGE FUENTES
No. 13875
Exp. 6/30/14
ELECTRICAL
STATE OF CALIFORNIA

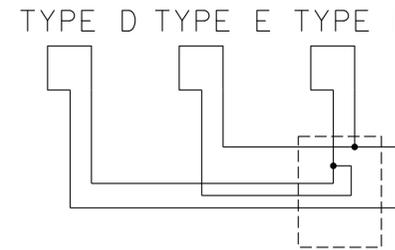
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



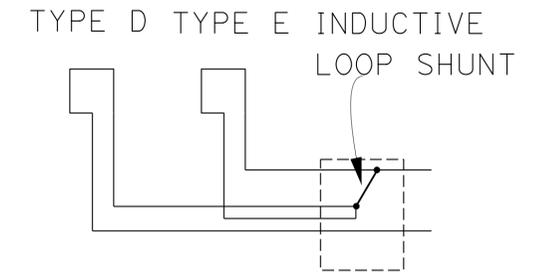
TYPICAL LOOP DETAIL



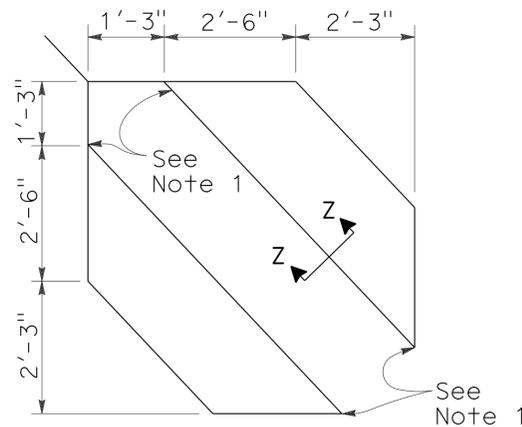
LOOP CONNECTION  
TYPE D + 3 TYPE E



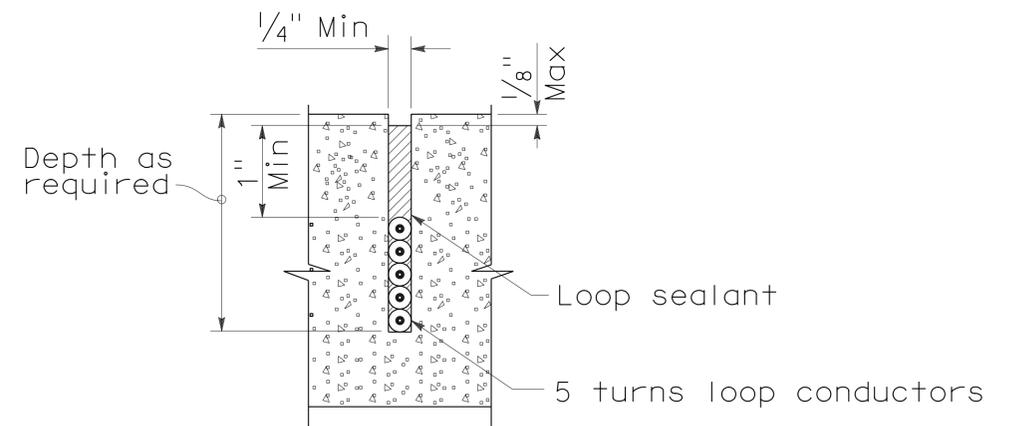
LOOP CONNECTION  
TYPE D + 2 TYPE E



LOOP CONNECTION  
TYPE D + TYPE E +  
INDUCTIVE LOOP SHUNT



SAWCUT DETAIL



SECTION Z-Z (FOR TYPE D LOOP DETECTOR)

SLOT DETAILS - TYPE 2 LOOP CONDUCTOR

TYPE D LOOP DETECTOR CONFIGURATION

NOTES:

1. ROUND CORNERS OF ACUTE ANGLE SAWCUTS TO PREVENT DAMAGE TO CONDUCTORS.
2. USE SECTION Z-Z INSTEAD OF A-A IN ES-5A FOR TYPE D LOOP DETECTOR.
3. INSTALL 5 TURNS FOR ALL TYPE D LOOP DETECTORS.
4. USE TYPE "D" LOOP DETECTOR DETAIL IN REVISED STANDARD PLAN ES-5B.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	REVISOR	DATE
<b>Caltrans</b> TRAFFIC DESIGN	YI TSAU	JH	10/30/12
	CHECKED BY	DESIGNED BY	
		JESSE RUELAS	
	DESIGNED BY		
		JORGE FUENTES	

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	19	65

*Grace M. Tsushima*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 12-9-13

**UNIT OF MEASUREMENT SYMBOLS:**

Some of the symbols used in the project plan quantity tables and in the Bid Item List are:

SYMBOL USED	DEFINITIONS
ACRE	ACRE
CF	CUBIC FOOT
CY	CUBIC YARD
EA	EACH
GAL	GALLON
LB	POUND
LF	LINEAR FOOT
SQFT	SQUARE FOOT
SQYD	SQUARE YARD
STA	100 FEET
TAB	TABLET
TON	2,000 POUNDS

Some of the symbols used in the plans other than in the project plan quantity tables are:

SYMBOL USED	DEFINITIONS
ksi	KIPS PER SQUARE INCH
ksf	KIPS PER SQUARE FOOT
psi	POUNDS PER SQUARE INCH
psf	POUNDS PER SQUARE FOOT
lb/ft <sup>3</sup> , pcf	POUNDS PER CUBIC FOOT
tsf	TONS PER SQUARE FOOT
mph, MPH *	MILES PER HOUR
∅	NOMINAL DIAMETER
oz	OUNCE
lb	POUND
kíp	1,000 POUNDS
cal	CALORIE
ft	FOOT OR FEET
gal	GALLON

\* For use on a sign panel only

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ABBREVIATIONS  
(SHEET 2 OF 2)**

NO SCALE

RSP A10B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A10B  
DATED MAY 20, 2011 - PAGE 2 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A10B**

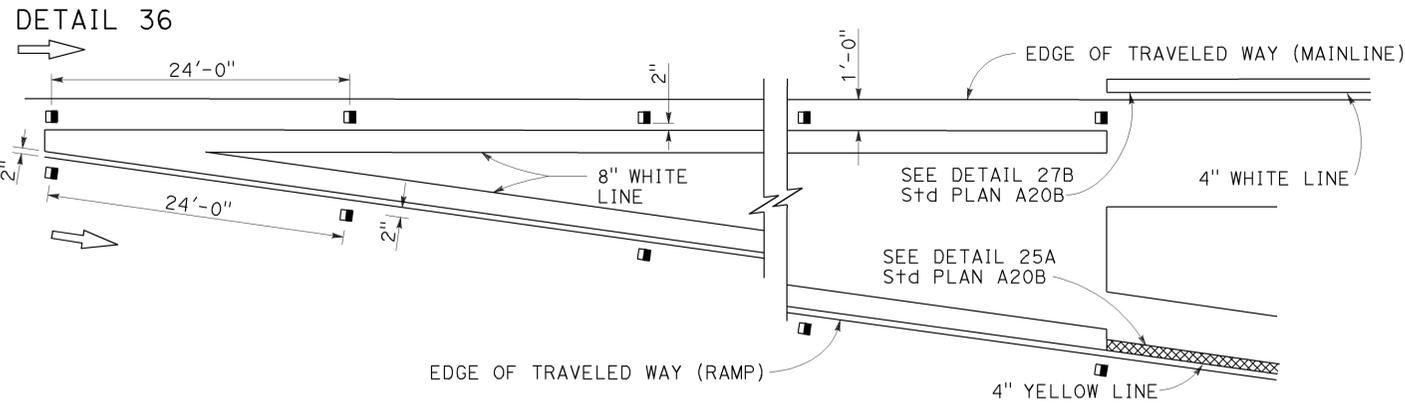
	<b>M</b>
Maint	MAINTENANCE
Max	MAXIMUM
MB	METAL BEAM
MBB	METAL BEAM BARRIER
MBGR	METAL BEAM GUARD RAILING
Med	MEDIAN
MGS	MIDWEST GUARDRAIL SYSTEM
MH	MANHOLE
Min	MINIMUM
Misc	MISCELLANEOUS
Misc I & S	MISCELLANEOUS IRON AND STEEL
Mkr	MARKER
Mod	MODIFIED, MODIFY
Mon	MONUMENT
MP	METAL PLATE
MPGR	METAL PLATE GUARD RAILING
MR	MOVEMENT RATING
MSE	MECHANICALLY STABILIZED EMBANKMENT
Mt	MOUNTAIN, MOUNT
MtI	MATERIAL
MVP	MAINTENANCE VEHICLE PULLOUT
	<b>N</b>
N	NORTH
NB	NORTHBOUND
No.	NUMBER (MUST HAVE PERIOD)
Nos.	NUMBERS (MUST HAVE PERIOD)
NPS	NOMINAL PIPE SIZE
NS	NEAR SIDE
NSP	NEW STANDARD PLAN
NTS	NOT TO SCALE
	<b>O</b>
Obir	OBLITERATE
OC	OVERCROSSING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OG	ORIGINAL GROUND
OGAC	OPEN GRADED ASPHALT CONCRETE
OGFC	OPEN GRADED FRICTION COURSE
OH	OVERHEAD
OHWM	ORDINARY HIGH WATER MARK
O-O	OUT TO OUT
Opp	OPPOSITE
OSD	OVERSIDE DRAIN
	<b>P</b>
p	PAGE
PAP	PERFORATED ALUMINUM PIPE
PB	PULL BOX
PC	POINT OF CURVATURE, PRECAST
PCC	POINT OF COMPOUND CURVE, PORTLAND CEMENT CONCRETE
PCMS	PORTABLE CHANGEABLE MESSAGE SIGN
PCP	PERFORATED CONCRETE PIPE, PRESTRESSED CONCRETE PIPE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PEC	PERMIT TO ENTER AND CONSTRUCT
Ped	PEDESTRIAN
Ped OC	PEDESTRIAN OVERCROSSING
Ped UC	PEDESTRIAN UNDERCROSSING
Perm MtI	PERMEABLE MATERIAL

	<b>P continued</b>
PG	PROFILE GRADE
PI	POINT OF INTERSECTION
PJP	PARTIAL JOINT PENETRATION
Pkwy	PARKWAY
PL, PL	PLATE
P/L	PROPERTY LINE
PM	POST MILE, TIME FROM NOON TO MIDNIGHT
PN	PAVING NOTCH
POC	POINT OF HORIZONTAL CURVE
POT	POINT OF TANGENT
POVC	POINT OF VERTICAL CURVE
PP	PIPE PILE, PLASTIC PIPE, POWER POLE
PPL	PREFORMED PERMEABLE LINER
PPP	PERFORATED PLASTIC PIPE
PRC	POINT OF REVERSE CURVE
PRF	PAVEMENT REINFORCING FABRIC
PRVC	POINT OF REVERSE VERTICAL CURVE
PS&E	PLANS, SPECIFICATIONS AND ESTIMATES
PS, P/S	PRESTRESSED
PSP	PERFORATED STEEL PIPE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
Pvmt	PAVEMENT
	<b>Q</b>
Qty	QUANTITY
	<b>R</b>
R	RADIUS
R & D	REMOVE AND DISPOSE
R & S	REMOVE AND SALVAGE
R/C	RATE OF CHANGE
RCA	REINFORCED CONCRETE ARCH
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RCPA	REINFORCED CONCRETE PIPE ARCH
Rd	ROAD
Reinf	REINFORCED, REINFORCEMENT, REINFORCING
Rel	RELOCATE
Repl	REPLACEMENT
Ret	RETAINING
Rev	REVISED, REVISION
Rdwy	ROADWAY
RHMA	RUBBERIZED HOT MIX ASPHALT
Riv	RIVER
RM	ROAD-MIXED
RP	RADIUS POINT, REFERENCE POINT
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION, REVISED STANDARD PLAN
Rt	RIGHT
Rte	ROUTE
RW	REDWOOD, RETAINING WALL
R/W	RIGHT OF WAY
Rwy	RAILWAY

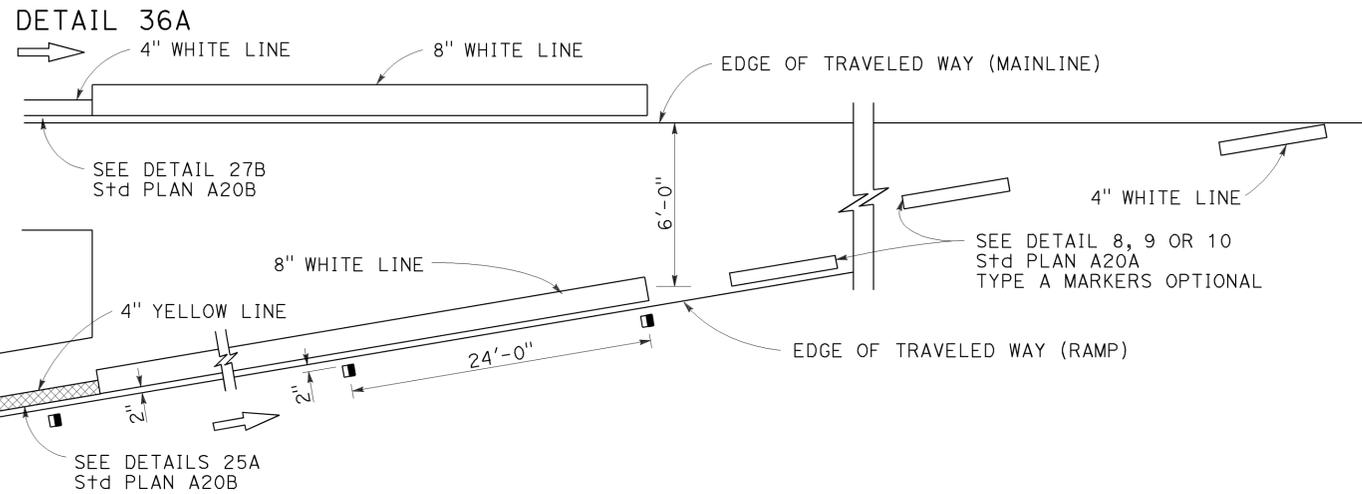
	<b>S</b>
S	SOUTH, SUPPLEMENT
SAE	STRUCTURE APPROACH EMBANKMENT
Salv	SALVAGE
SAPP	STRUCTURAL ALUMINUM PLATE PIPE
SB	SOUTHBOUND
SC	SAND CUSHION
SCSP	SLOTTED CORRUGATED STEEL PIPE
SD	STORM DRAIN
Sec	SECOND, SECTION
Sep	SEPARATION
SG	SUBGRADE
Shld	SHOULDER
Sht	SHEET
Sim	SIMILAR
⊥	STATION LINE
SM	SELECTED MATERIAL
Spec	SPECIAL, SPECIFICATIONS
SPP	SLOTTED PLASTIC PIPE
SS	SLOPE STAKE
SSBM	STRAP AND SADDLE BRACKET METHOD
SSD	STRUCTURAL SECTION DRAIN
SSPA	STRUCTURAL STEEL PLATE ARCH
SSPP	STRUCTURAL STEEL PLATE PIPE
SSPPA	STRUCTURAL STEEL PLATE PIPE ARCH
SSRP	STEEL SPIRAL RIB PIPE
St	STREET
Sta	STATION
STBB	SINGLE THRIE BEAM BARRIER
Std	STANDARD
Str	STRUCTURE
Surf	SURFACING
SW	SIDEWALK, SOUND WALL
Swr	SEWER
Sym	SYMMETRICAL
S4S	SURFACE 4 SIDES
	<b>T</b>
T	SEMI-TANGENT
Tan	TANGENT
TBB	THRIE BEAM BARRIER
Tbr	TIMBER
TC	TOP OF CURB
TCB	TRAFFIC CONTROL BOX
TCE	TEMPORARY CONSTRUCTION EASEMENT
TeI	TELEPHONE
Temp	TEMPORARY
TG	TOP OF GRADE
Tot	TOTAL
TP	TELEPHONE POLE
TPB	TREATED PERMEABLE BASE
TPM	TREATED PERMEABLE MATERIAL
Trans	TRANSITION

	<b>T continued</b>
TS	TRANSVERSE, TRAFFIC SIGNAL, TUBULAR STEEL
Typ	TYPICAL
	<b>U</b>
UC	UNDERCROSSING
UD	UNDERDRAIN
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UP	UNDERPASS
	<b>V</b>
V	VALVE, DESIGN SPEED
Var	VARIABLE, VARIES
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
Vert	VERTICAL
Via	VIADUCT
Vol	VOLUME
	<b>W</b>
W	WEST, WIDTH
WB	WESTBOUND
WH	WEEP HOLE
WM	WIRE MESH
WS	WATER SURFACE
WSP	WELDED STEEL PIPE
Wt	WEIGHT
WV	WATER VALVE
WW	WINGWALL
WWLOL	WINGWALL LAYOUT LINE
	<b>X</b>
X Sec	CROSS SECTION
Xing	CROSSING
	<b>Y</b>
Yr	YEAR
Yrs	YEARS

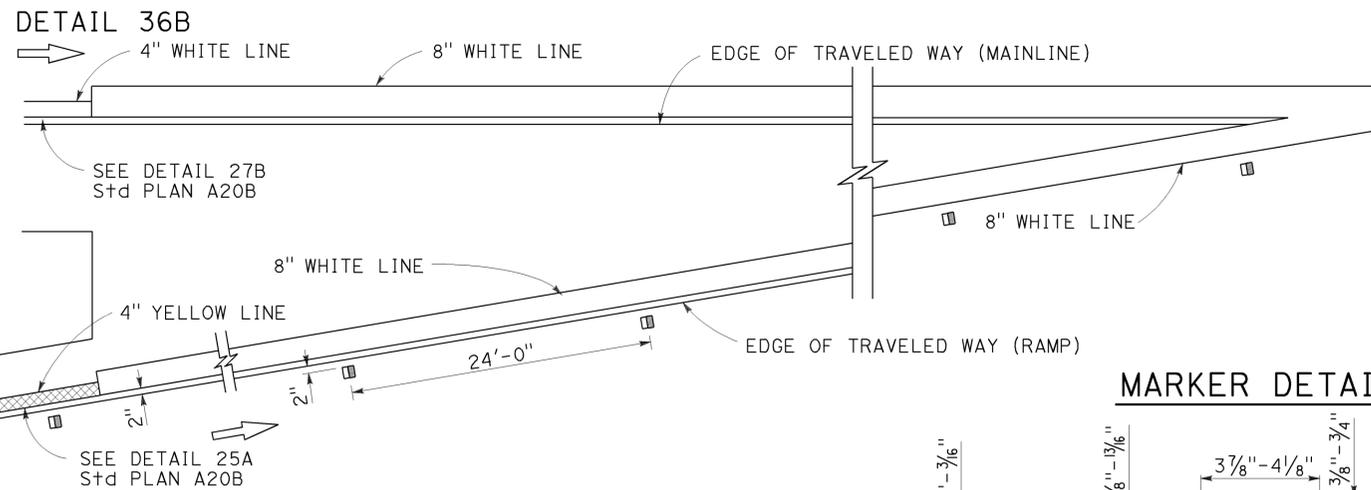
### EXIT RAMP NEUTRAL AREA (GORE) TREATMENT



### ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT



### ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT

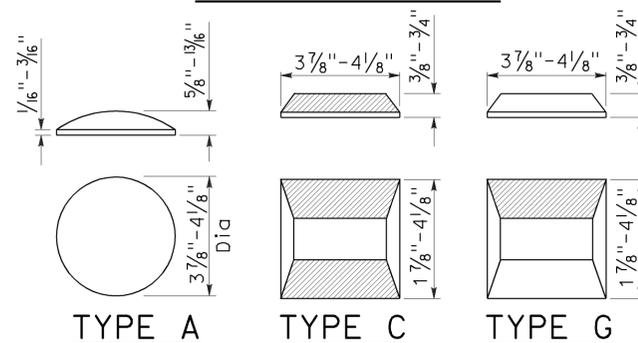


### MARKER DETAILS

#### LEGEND:

#### MARKERS

- TYPE A WHITE NON-REFLECTIVE
- ◻ TYPE C RED-CLEAR RETROREFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE



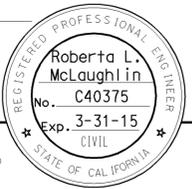
RETROREFLECTIVE FACE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	20	65

Roberta L. McLaughlin  
REGISTERED CIVIL ENGINEER

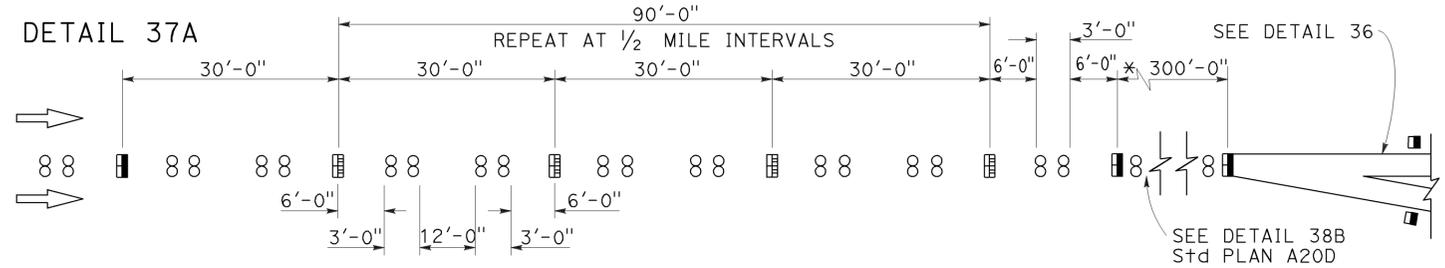
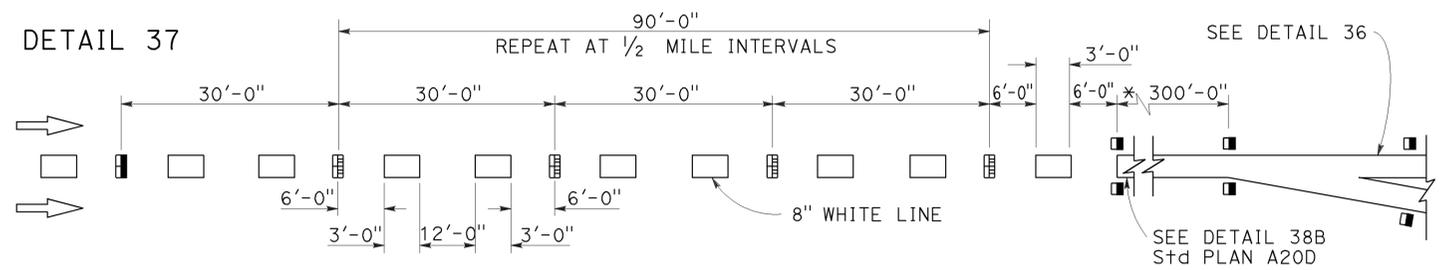
July 19, 2013  
PLANS APPROVAL DATE

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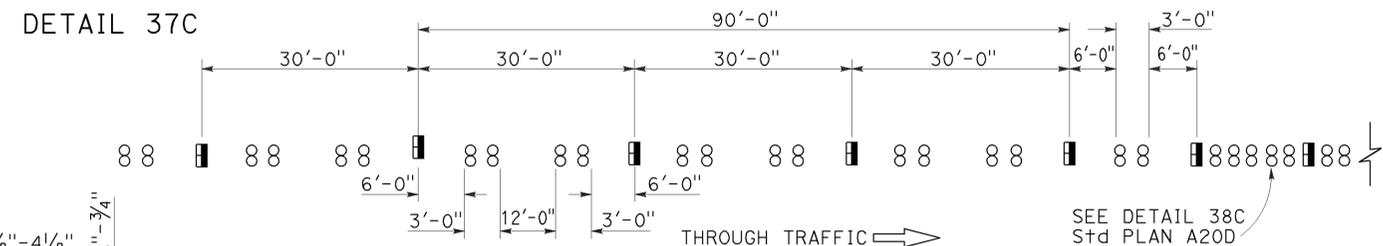
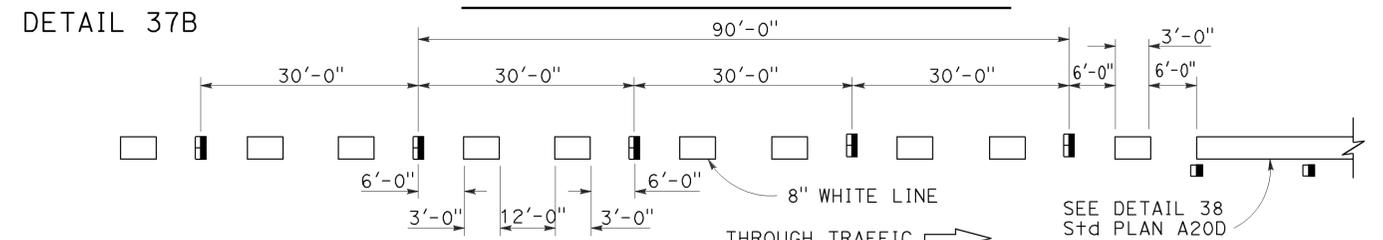
TO ACCOMPANY PLANS DATED 12-9-13

### LANE DROP AT EXIT RAMP



\* The solid channelizing line shown may be omitted on short auxiliary lanes where weaving length is critical.

### LANE DROP AT INTERSECTIONS



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

### PAVEMENT MARKERS AND TRAFFIC LINE TYPICAL DETAILS

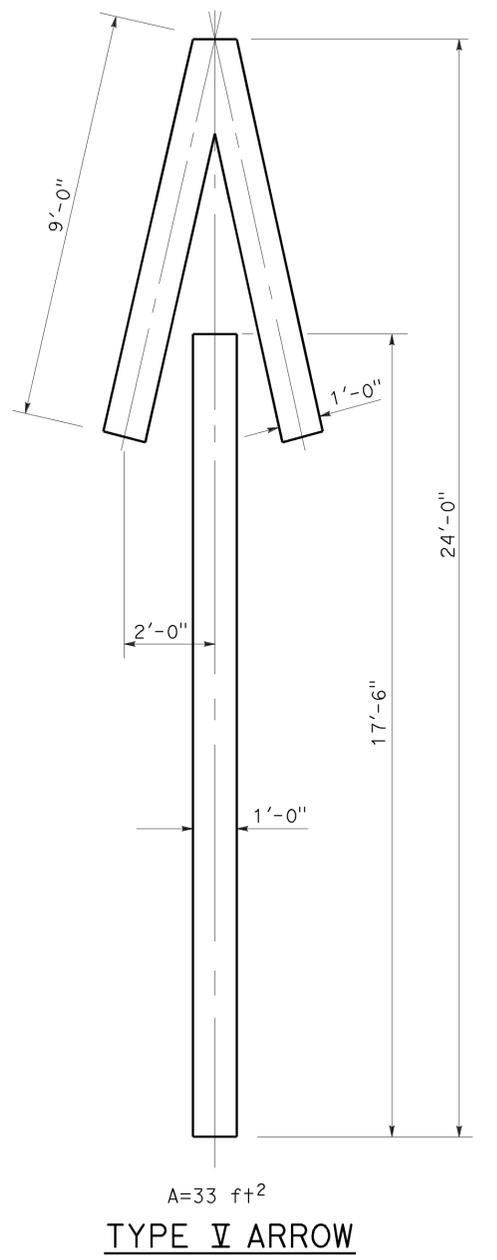
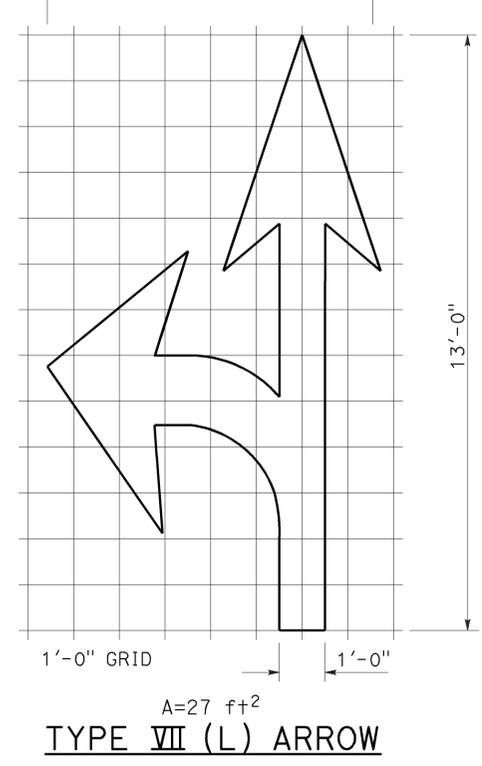
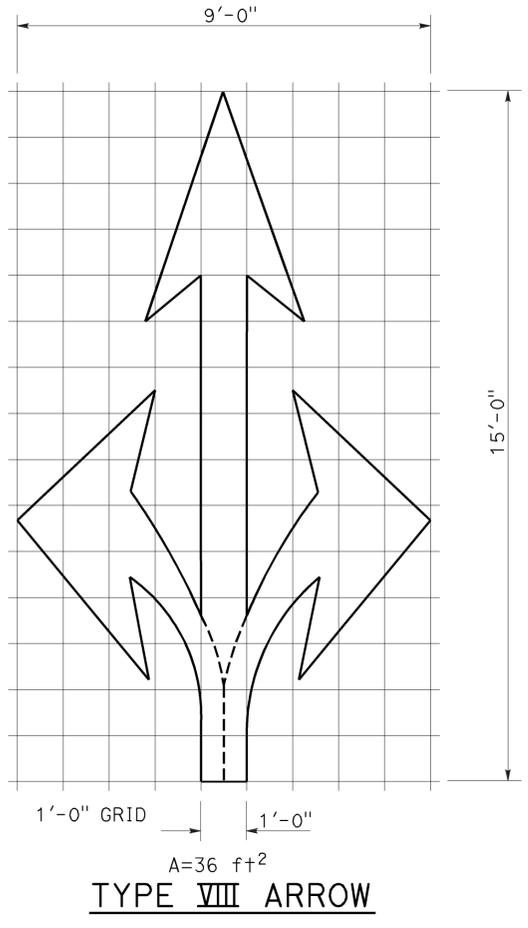
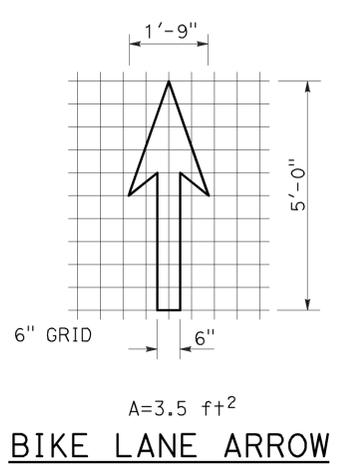
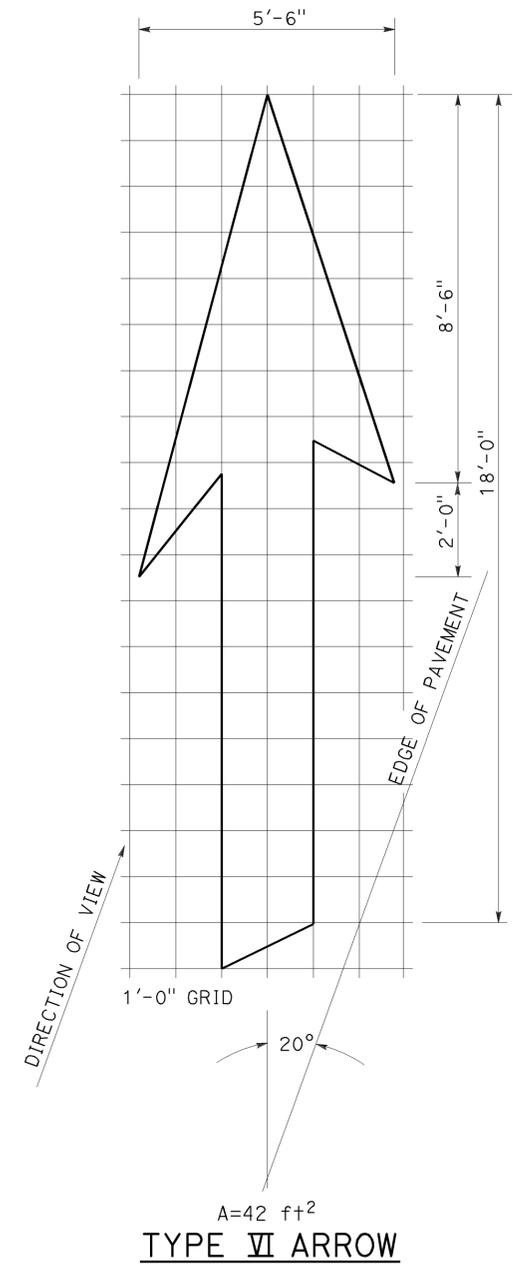
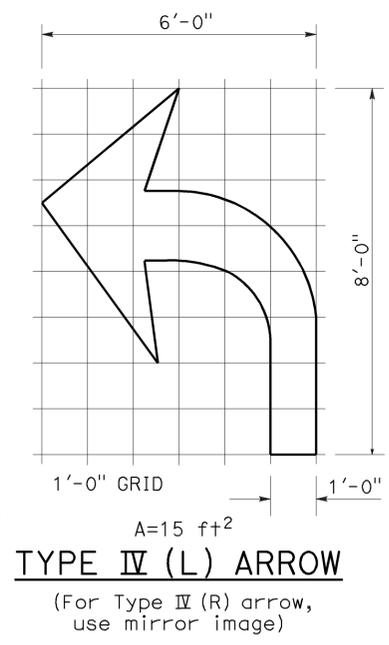
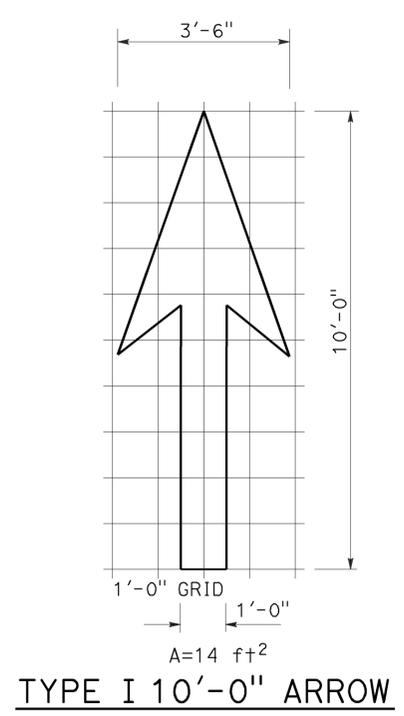
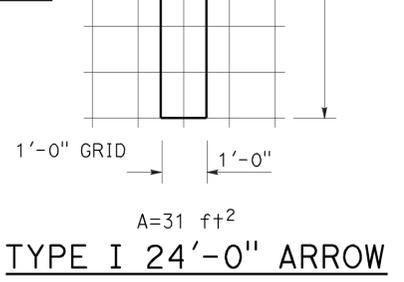
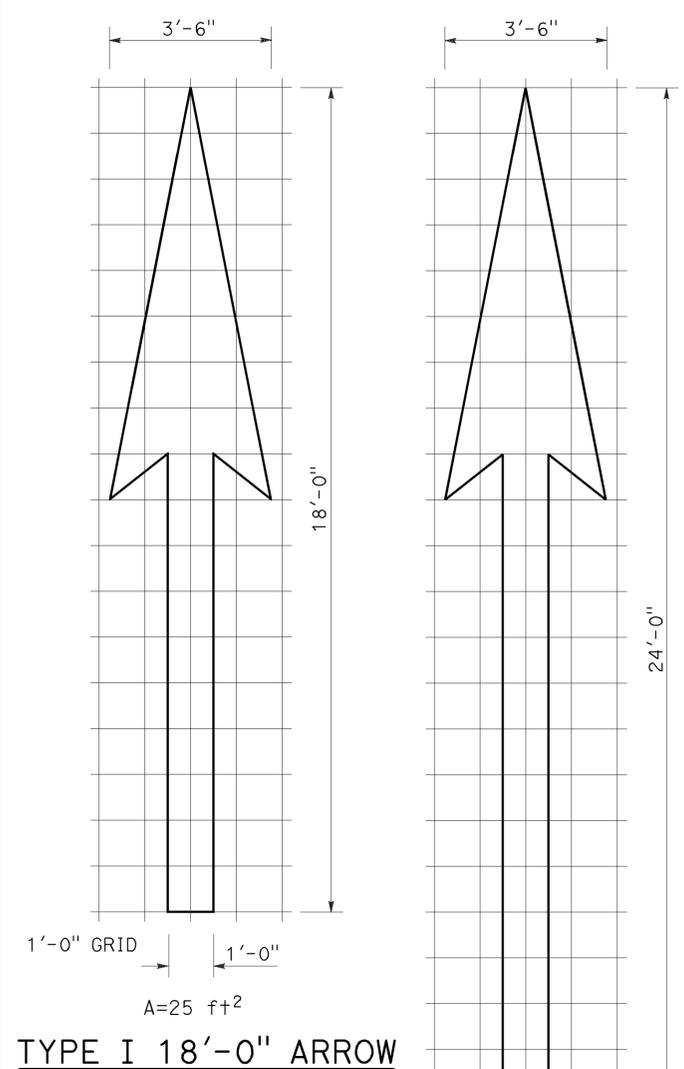
NO SCALE

RSP A20C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A20C DATED MAY 20, 2011 - PAGE 11 OF THE STANDARD PLANS BOOK DATED 2010.

### REVISED STANDARD PLAN RSP A20C

2010 REVISED STANDARD PLAN RSP A20C

TO ACCOMPANY PLANS DATED 12-9-13



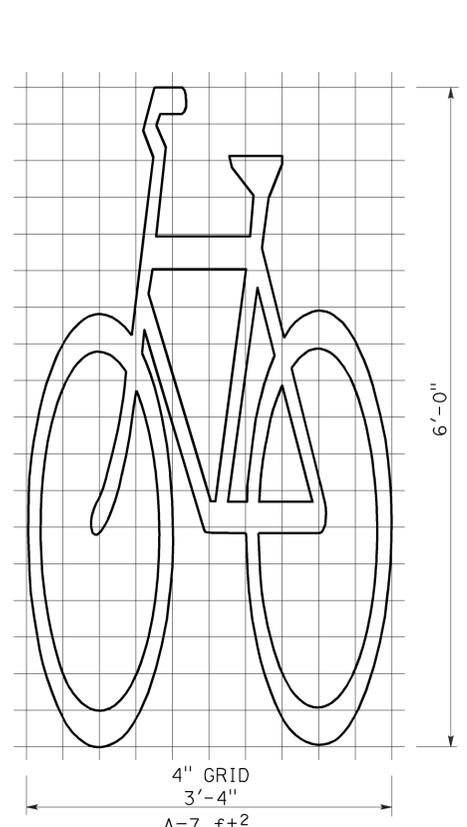
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS  
ARROWS**  
NO SCALE

**NOTE:**  
Minor variations in dimensions may be accepted by the Engineer.

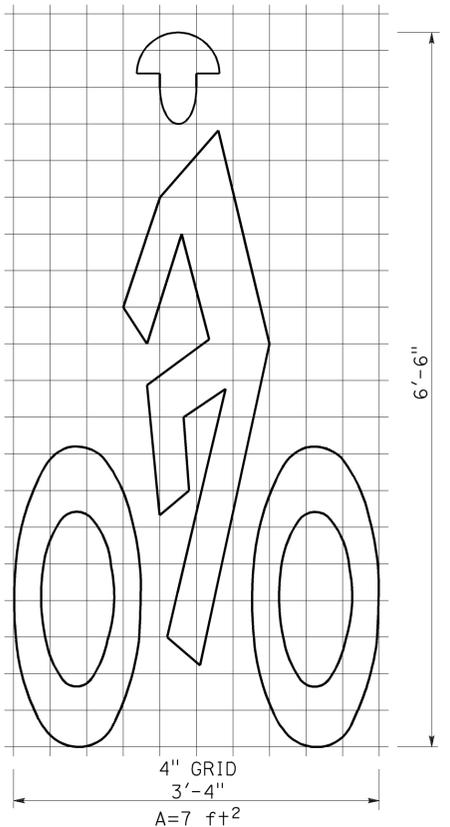
RSP A24A DATED APRIL 20, 2012 SUPERSEDES STANDARD PLAN A24A DATED MAY 20, 2011 - PAGE 13 OF THE STANDARD PLANS BOOK DATED 2010.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	22	65

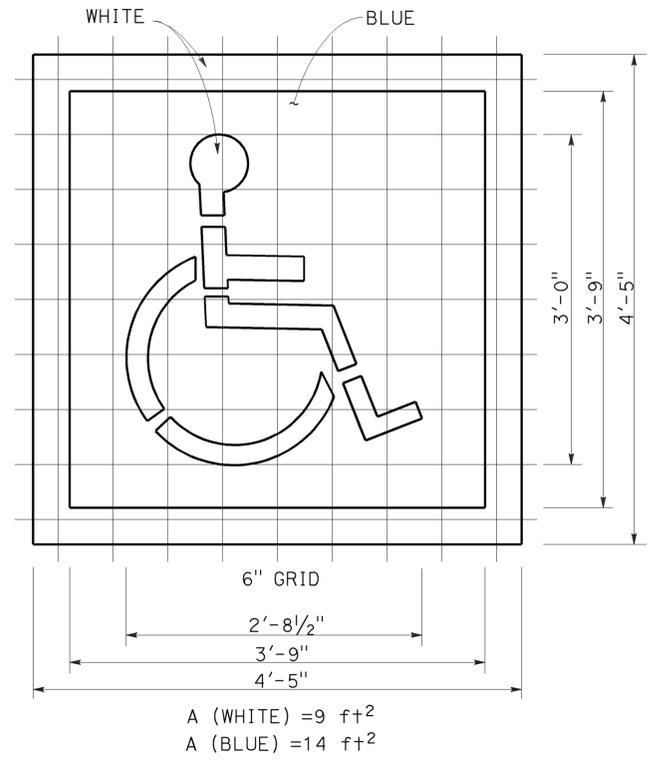
Robert L. McLaughlin  
 REGISTERED CIVIL ENGINEER  
 October 19, 2012  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



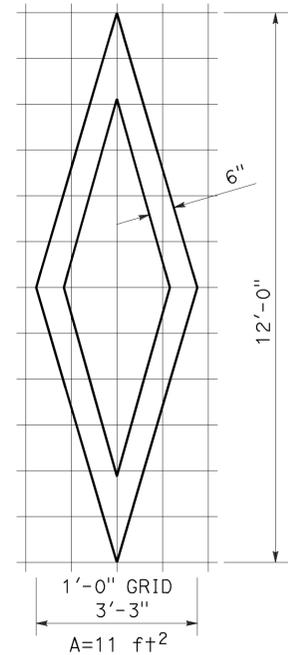
**BIKE LANE SYMBOL  
WITHOUT PERSON**



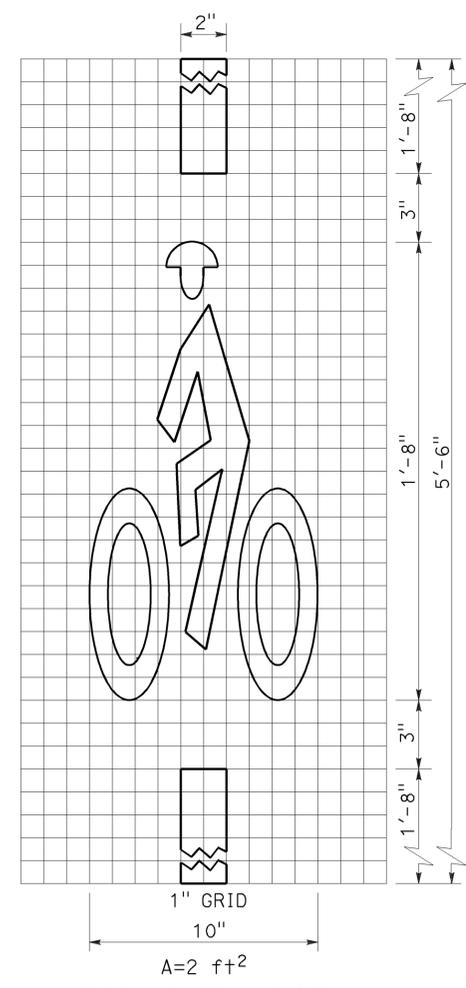
**BIKE LANE SYMBOL  
WITH PERSON**



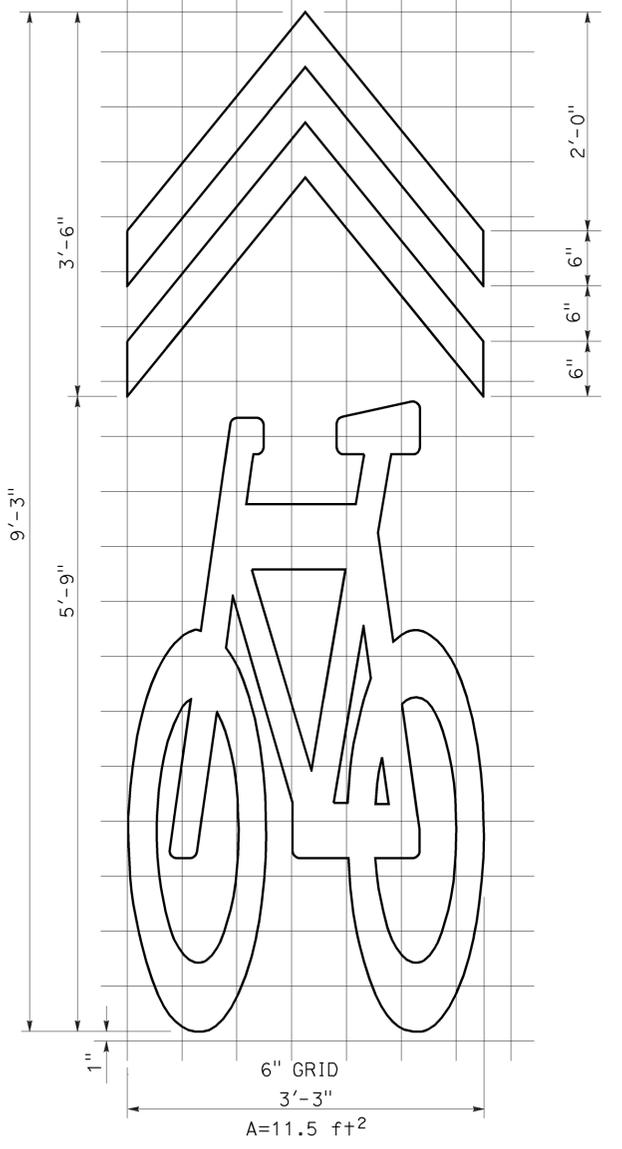
**INTERNATIONAL SYMBOL  
OF ACCESSIBILITY (ISA) MARKING**



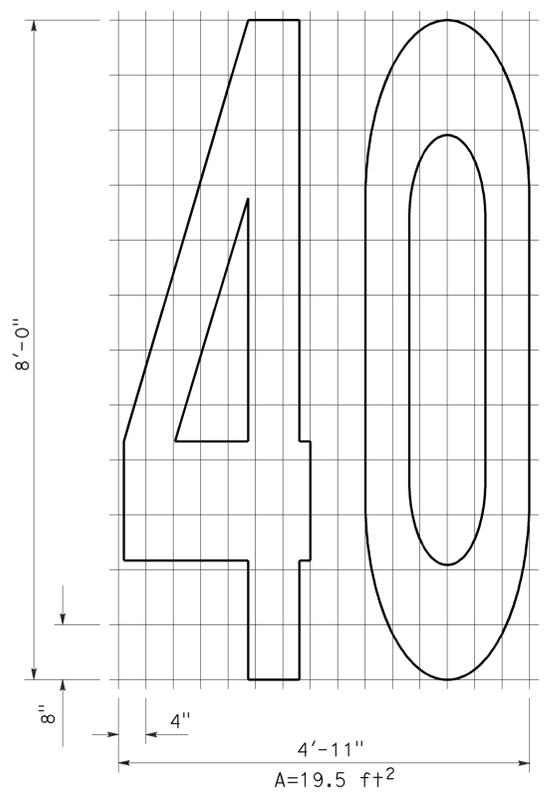
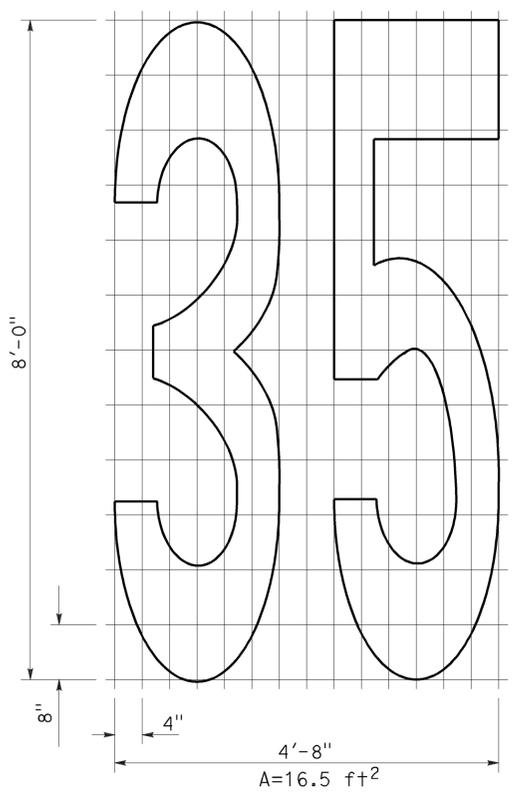
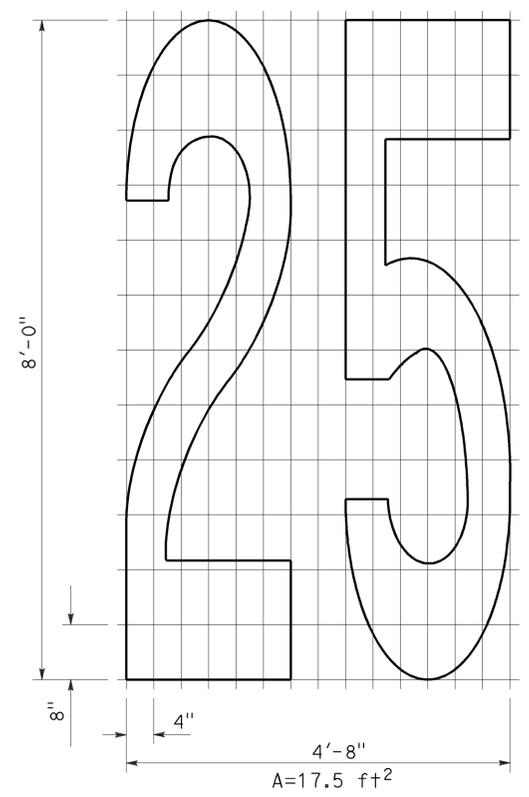
**DIAMOND SYMBOL**



**BICYCLE LOOP  
DETECTOR SYMBOL**



**SHARED ROADWAY BICYCLE MARKING**



**NUMERALS**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS  
 SYMBOLS AND NUMERALS**  
 NO SCALE

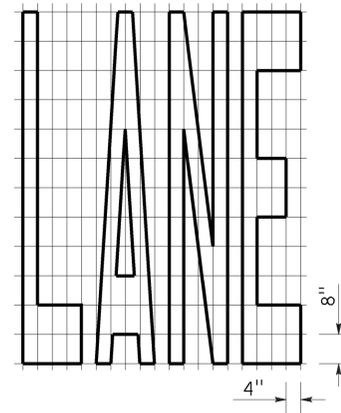
RSP A24C DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A24C DATED MAY 20, 2011 - PAGE 15 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A24C**

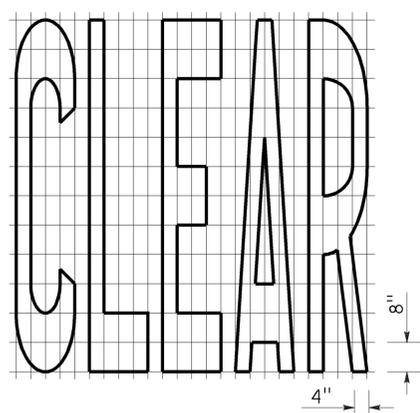
**2010 REVISED STANDARD PLAN RSP A24C**

TO ACCOMPANY PLANS DATED 12-9-13

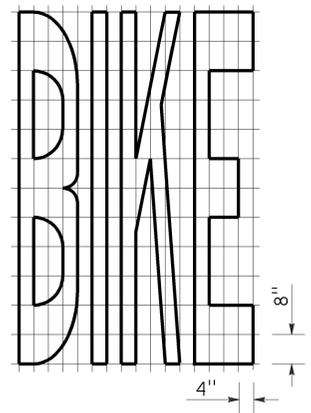
2010 REVISED STANDARD PLAN RSP A24E



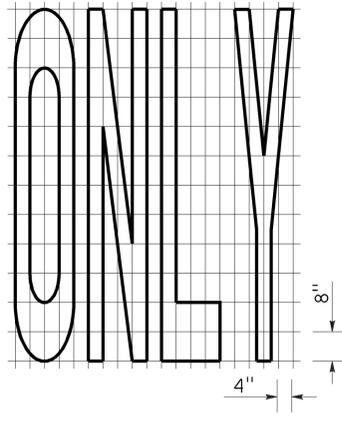
A=24 ft<sup>2</sup>



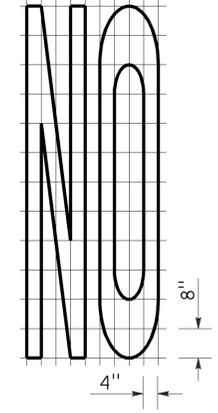
A=27 ft<sup>2</sup>



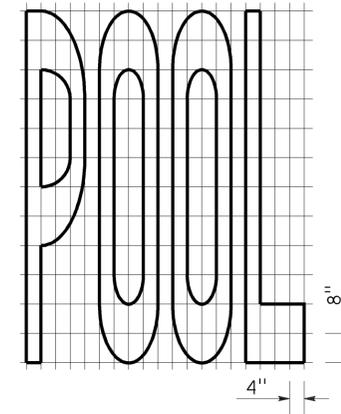
A=21 ft<sup>2</sup>



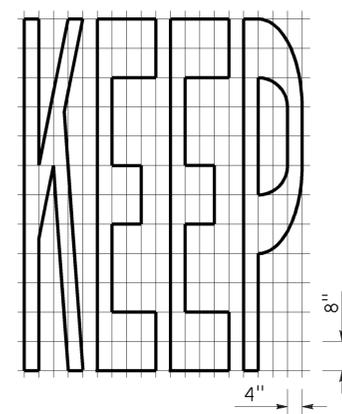
A=22 ft<sup>2</sup>



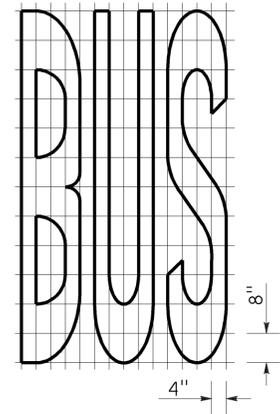
A=14 ft<sup>2</sup>



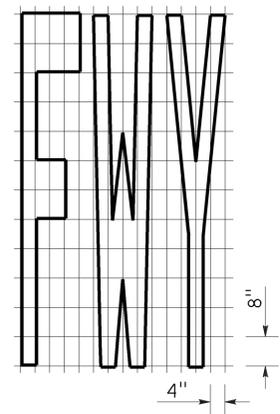
A=23 ft<sup>2</sup>



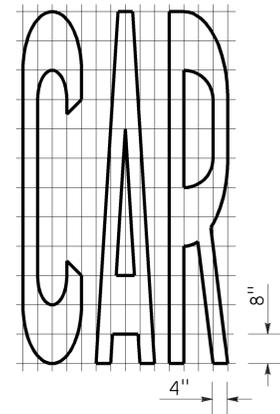
A=24 ft<sup>2</sup>



A=20 ft<sup>2</sup>

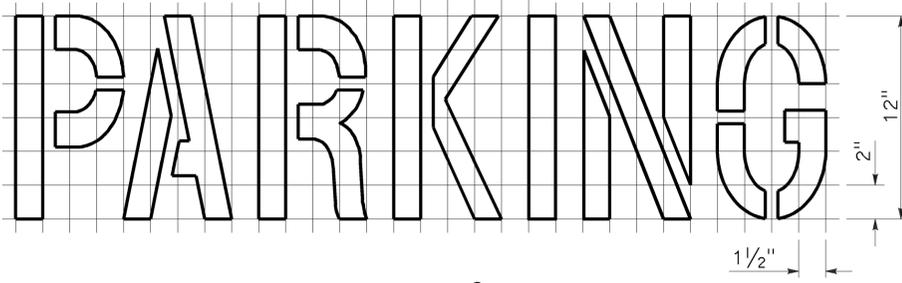
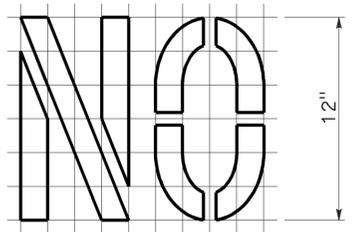


A=16 ft<sup>2</sup>

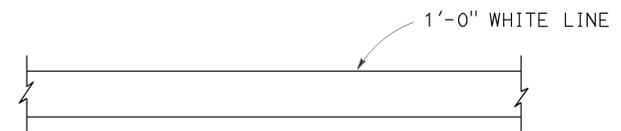


A=17 ft<sup>2</sup>

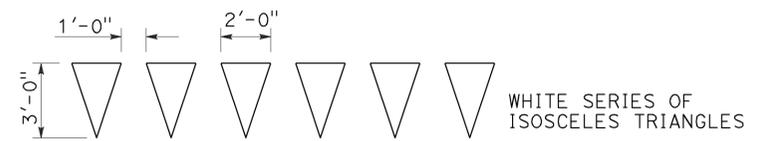
WORD MARKINGS			
ITEM	ft <sup>2</sup>	ITEM	ft <sup>2</sup>
LANE	24	NO	14
POOL	23	BIKE	21
CAR	17	BUS	20
CLEAR	27	ONLY	22
KEEP	24	FWY	16



A=2 ft<sup>2</sup>  
See Notes 6 and 7



LIMIT LINE (STOP LINE)



YIELD LINE

**NOTES:**

1. If a message consists of more than one word, it should read "UP", i.e., the first word should be nearest the driver.
2. The space between words should be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be reduced appropriately where there is limited space because of local conditions.
3. Minor variations in dimensions may be accepted by the Engineer.
4. Portions of a letter, number or symbol may be separated by connecting segments not to exceed 2" in width.
5. The words "NO PARKING" pavement marking is to be used for parking facilities. For typical locations of markings, see Standard Plans A90A and A90B.
6. The words "NO PARKING", shall be painted in white letters no less than 1'-0" high on a contrasting background and located so that it is visible to traffic enforcement officials.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS  
WORDS, LIMIT AND YIELD LINES**

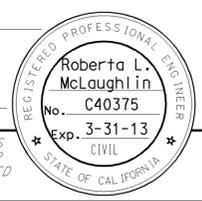
NO SCALE

RSP A24E DATED JULY 20, 2012 SUPERSEDES STANDARD PLAN A24E  
DATED MAY 20, 2011 - PAGE 17 OF THE STANDARD PLANS BOOK DATED 2010.

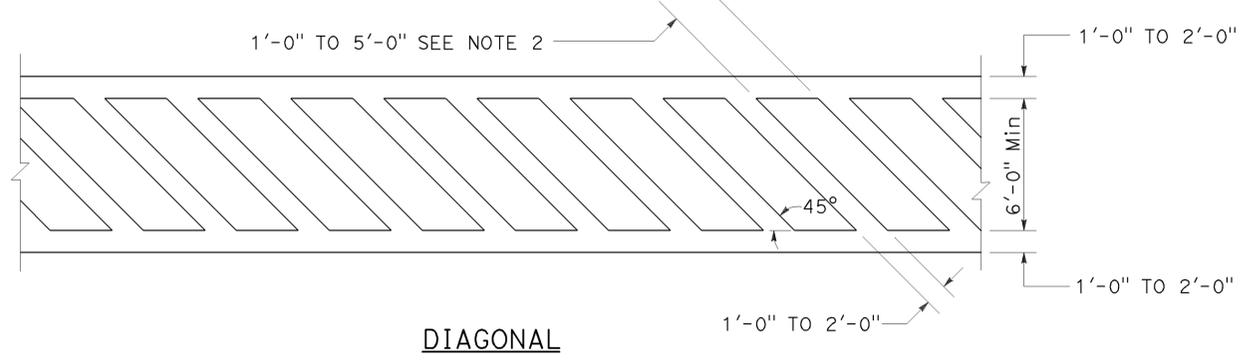
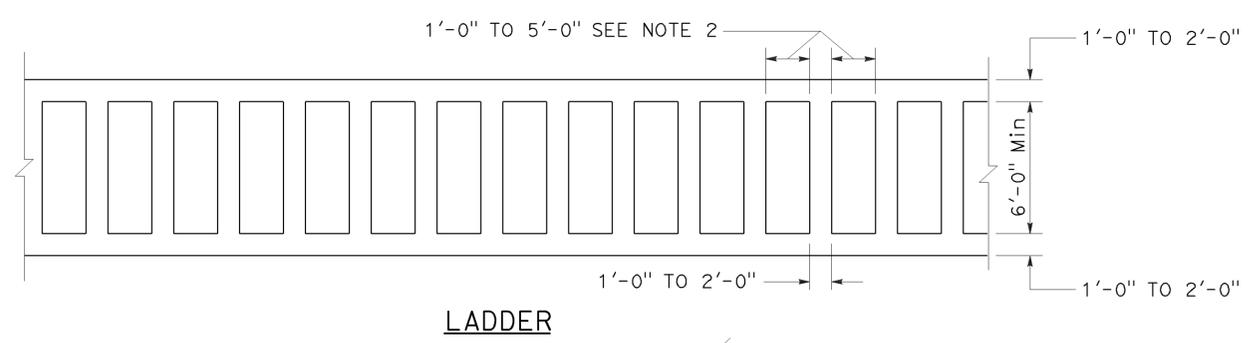
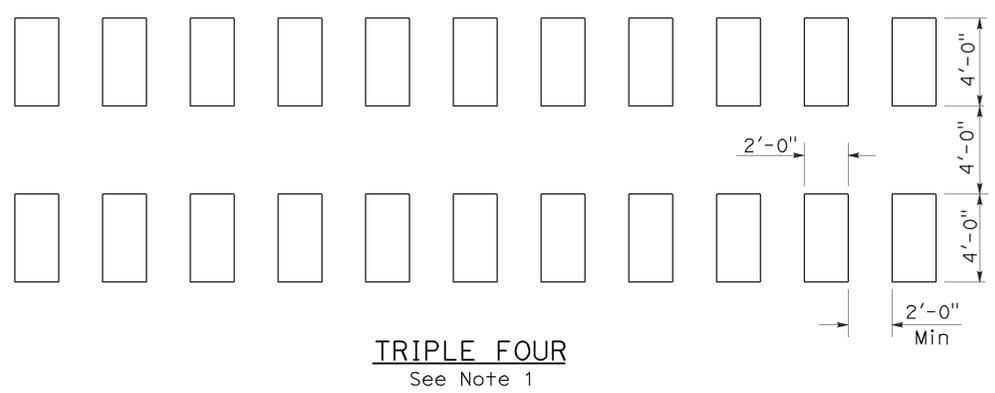
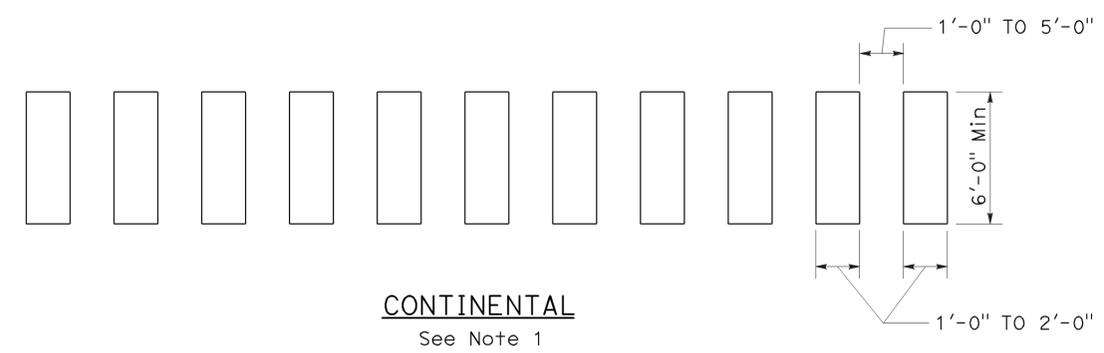
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	24	65

*Roberta L. McLaughlin*  
 REGISTERED CIVIL ENGINEER  
 July 20, 2012  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



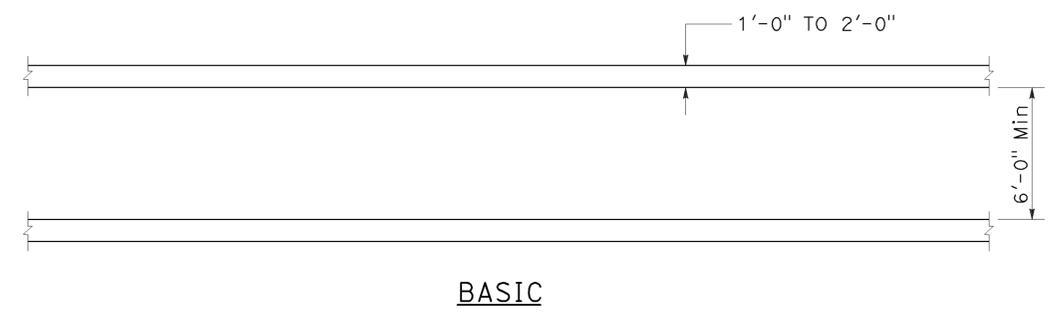
TO ACCOMPANY PLANS DATED 12-9-13



**HIGHER VISIBILITY CROSSWALKS**

**NOTES:**

1. Spaces between markings should be placed in wheel tracks of each lane.
2. Spacings not to exceed 2.5 times width of longitudinal line.
3. All crosswalk markings must be white except for those near schools must be yellow.



**BASIC**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS  
CROSSWALKS**

NO SCALE  
RSP A24F DATED JULY 20, 2012 SUPPLEMENTS THE  
STANDARD PLANS BOOK DATED 2010.

**2010 REVISED STANDARD PLAN RSP A24F**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	25	65

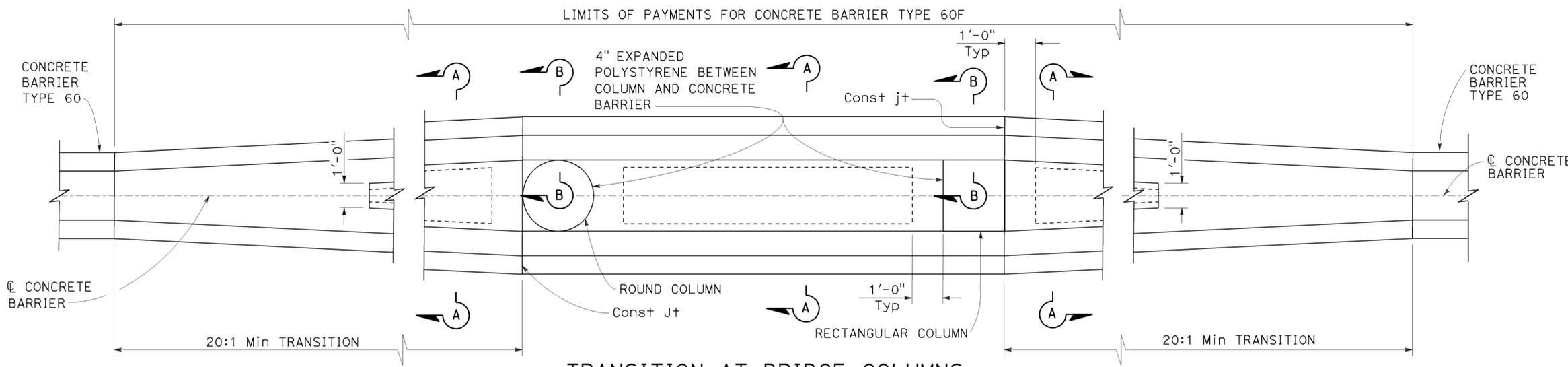
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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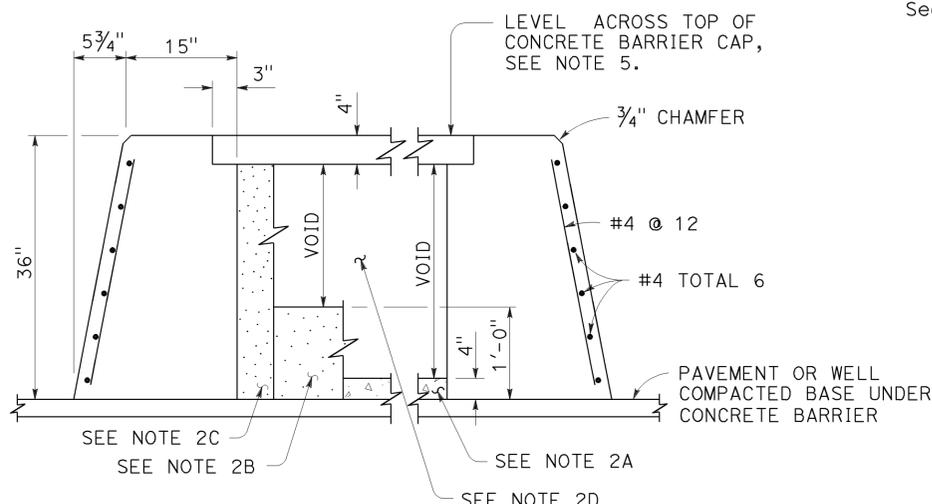
TO ACCOMPANY PLANS DATED 12-9-13

REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

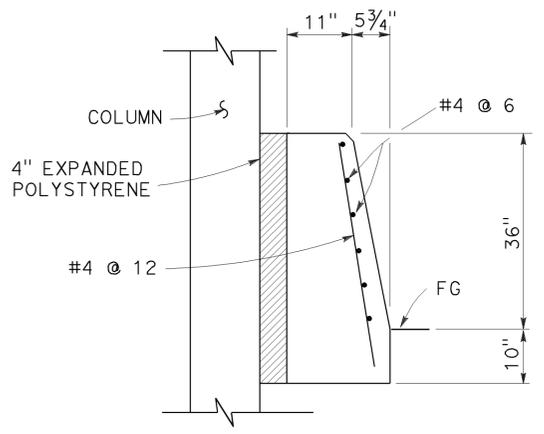


**TRANSITION AT BRIDGE COLUMNS**

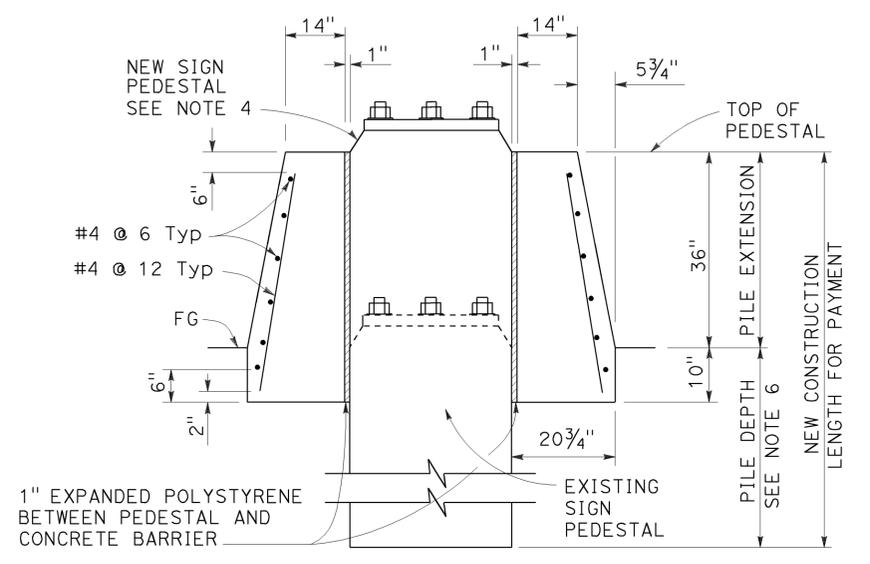
Concrete Barrier Type 60F  
See Note 7



**SECTION A-A**



**SECTION B-B**



**SECTION C-C**

**NOTES:**

- See Standard Plan A76A for Concrete Barrier Type 60.
- Contractor options for fill between concrete barrier walls:
  - Place 4" PCC at base between concrete barrier walls.
  - Place 1'-0" of granular material at base between walls.
  - Place granular material from base to bottom of 4" cap.
  - Monolithic concrete with foam blockouts is not permitted.
- Reinforcing steel shall extend continuous through construction joints.
- See "Overhead Sign" plans for sign pedestal elevations on new construction.
- Adjust height of concrete barrier wall on low side of offset or superelevated roadways to provide level grade across top of concrete barrier cap.
- See Overhead Signs Standard Plan Pile Foundation Tables.
- All locations with limited shoulder width available for barrier, see Standard Plan A76F for use of Concrete Barrier Type 60GE.

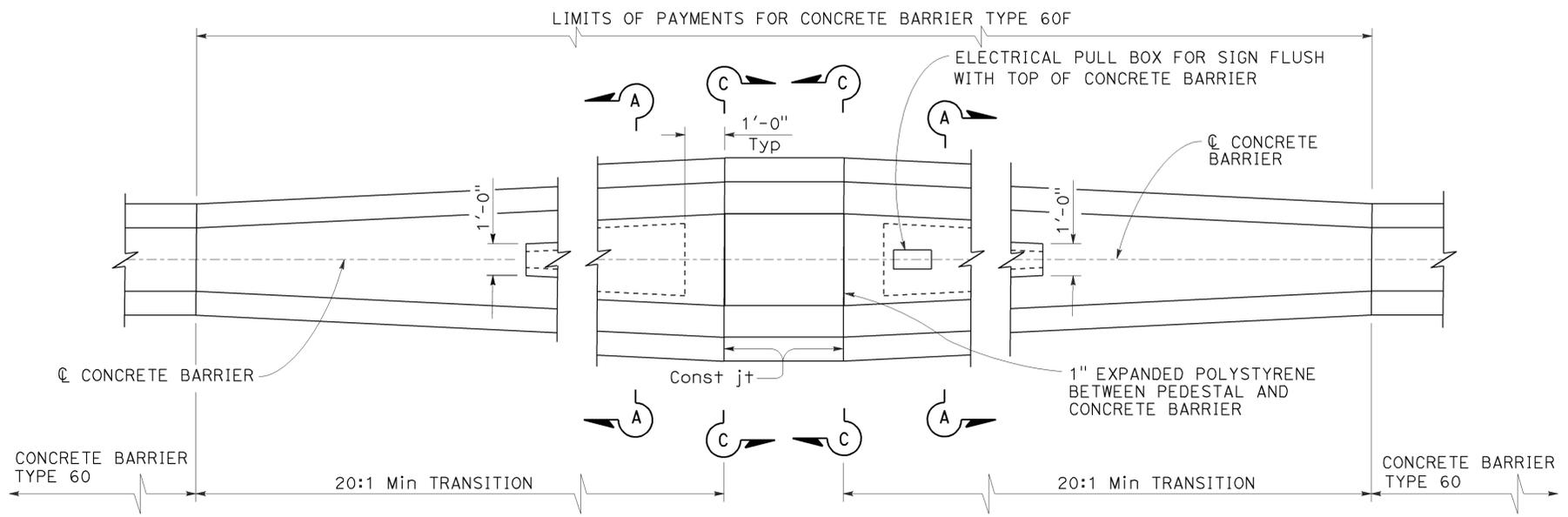
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**CONCRETE BARRIER TYPE 60F**

NO SCALE

RSP A76C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A76C  
DATED MAY 20, 2011 - PAGE 36 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A76C**



**TRANSITION AT SIGN PEDESTAL**

Concrete Barrier Type 60F  
See Note 7

2010 REVISED STANDARD PLAN RSP A76C

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	26	65

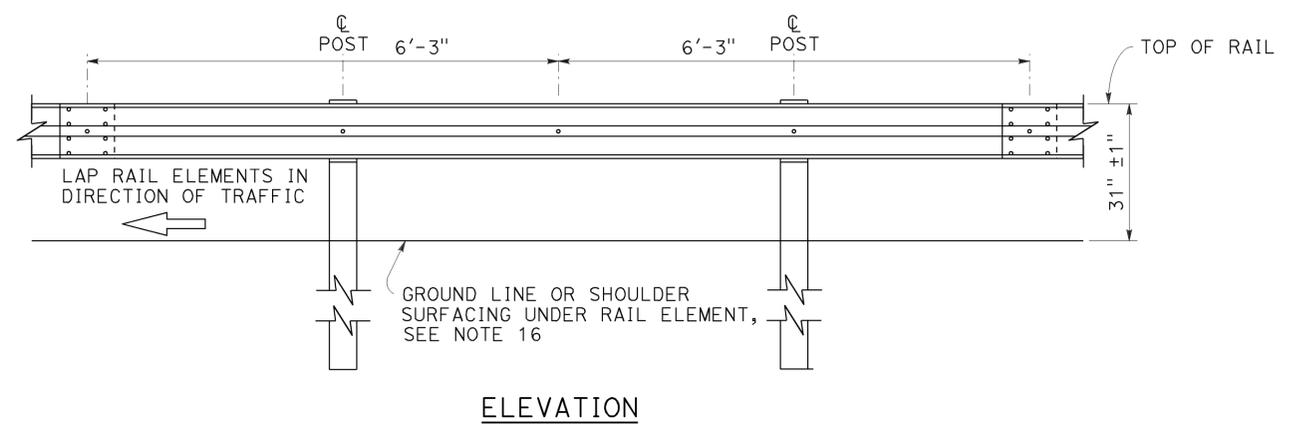
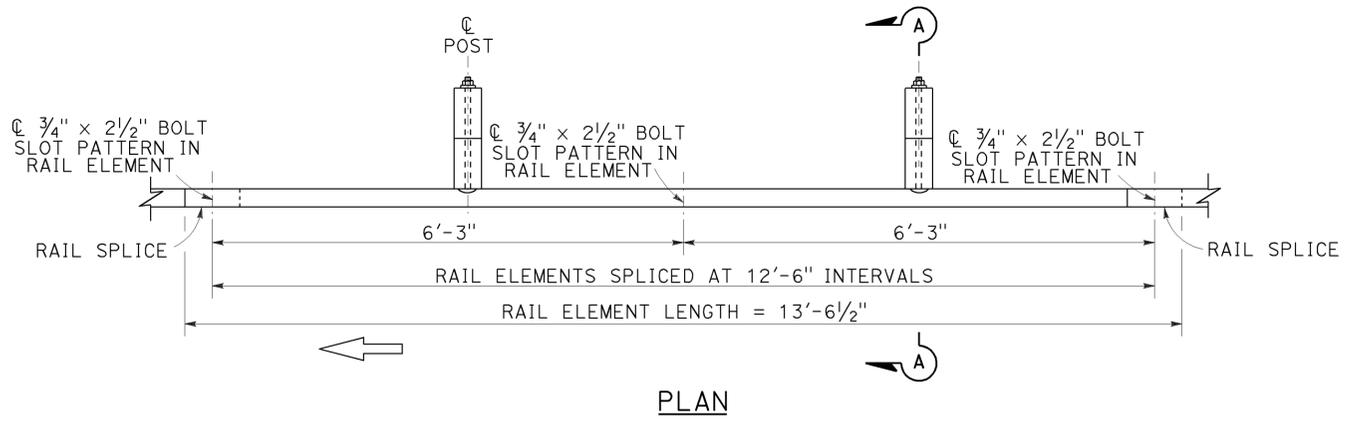
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

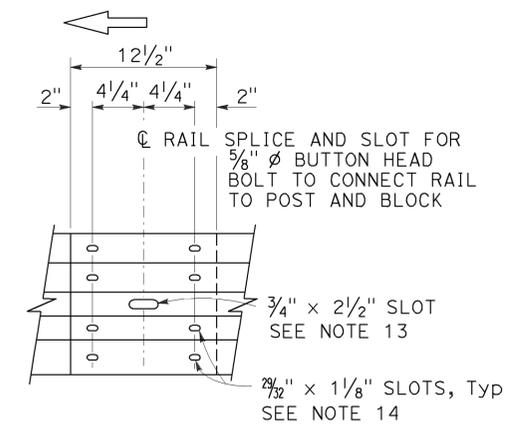
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REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

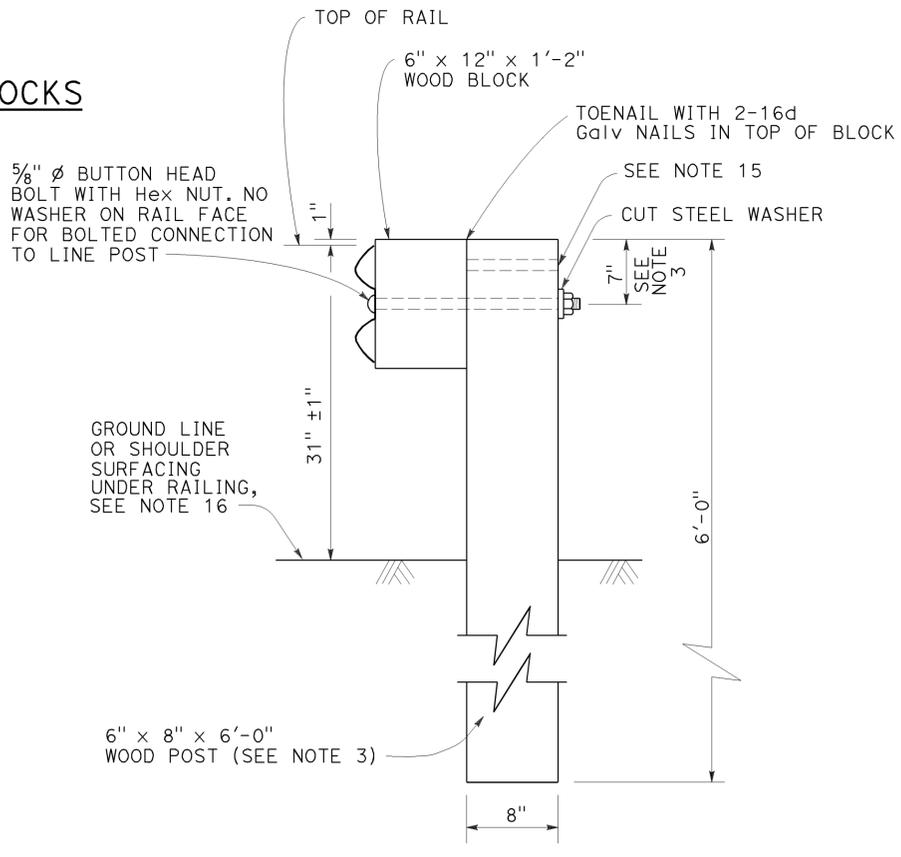
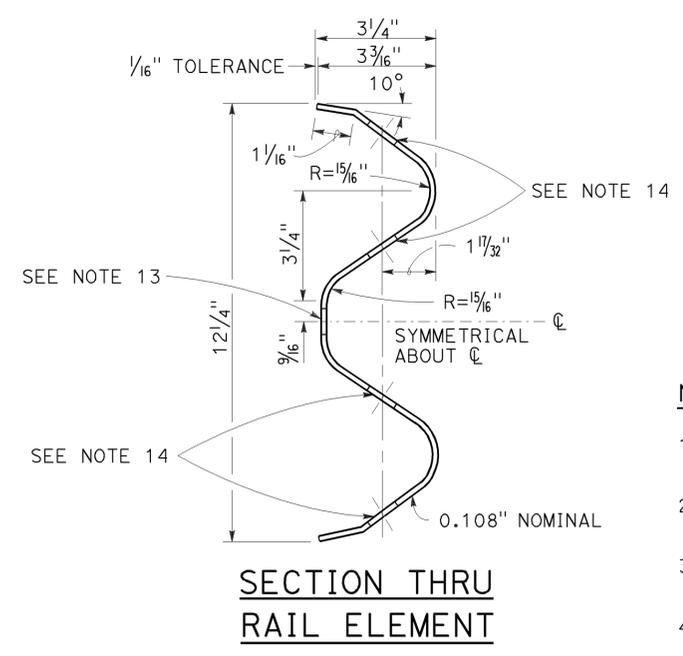
TO ACCOMPANY PLANS DATED 12-9-13



MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS



- Connect the over lapped end of the rail elements with 5/8"  $\phi$  x 1 3/8" button head oval shoulder splice bolts inserted into the 2 3/32" x 1 1/8" slots and bolted together with 5/8"  $\phi$  recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.
- The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



NOTES:

- For details of steel post installations, see Revised Standard Plan RSP A77L2.
- For details of standard hardware used to construct MGS, see Revised Standard Plan RSP A77M1.
- For details of wood posts and wood blocks used to construct MGS, see Revised Standard Plan RSP A77N1.
- For additional installation details, see Revised Standard Plan RSP A77N3.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- For MGS typical layouts, see the A77P, A77Q and A77R Series of Standard Plans.
- If railing is connected to terminal system end treatment, use 31" height terminal system end treatment.
- For MGS end anchor details, see Revised Standard Plans RSP A77S1 and RSP A77T2.
- For details of MGS transition to bridge railing, see Revised Standard Plan RSP A77U4.
- For additional details of MGS connection to bridge railing, see Revised Standard Plans RSP A77U1, RSP A77U2 and RSP A77V1.
- For MGS connection details to abutments and walls, see Revised Standard Plan RSP A77U3.
- For typical MGS delineation and dike positioning details, see Revised Standard Plan RSP A77N4.
- Slotted hole for bolted connection of rail element to block and post. See "Section Thru Rail Element".
- Slotted holes for splice bolts to overlap ends of rail element. See "Section Thru Rail Element".
- Additional hole in uppermost portion of line post is for potential future adjustments of railing height. See Revised Standard Plan RSP A77N1.
- Install posts in soil.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
STANDARD RAILING SECTION  
(WOOD POST WITH  
WOOD BLOCK)**

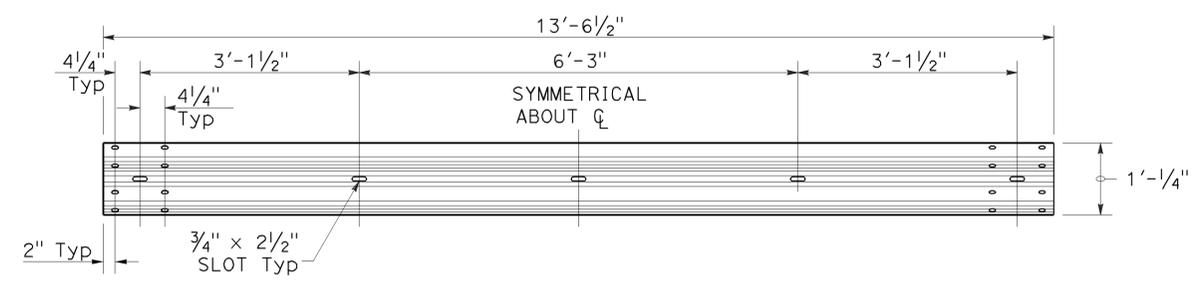
NO SCALE

RSP A77L1 DATED JULY 19, 2013 SUPPLEMENTS STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77L1**

2010 REVISED STANDARD PLAN RSP A77L1

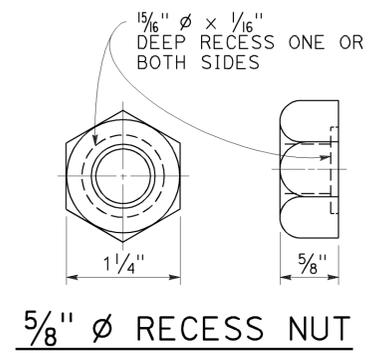
TO ACCOMPANY PLANS DATED 12-9-13



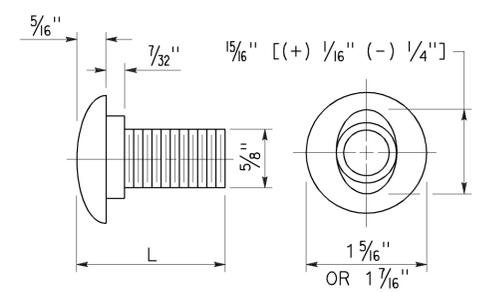
**TYPICAL RAIL ELEMENT**

**NOTE:**

1. Slotted holes for splice bolts to overlap ends of rail element.



**5/8" Ø RECESS NUT**

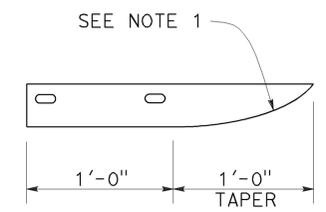


**5/8" Ø BUTTON HEAD BOLT**

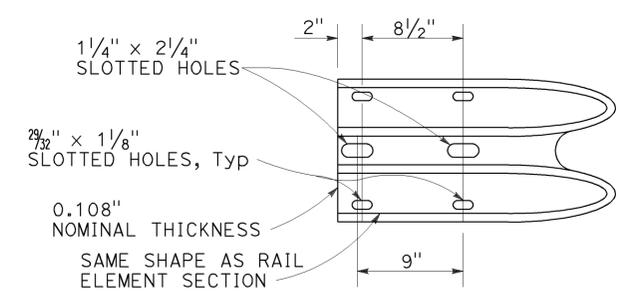
**BUTTON HEAD BOLT**

L	THREAD LENGTH
1 3/8"	FULL THREAD LENGTH
2"	FULL THREAD LENGTH
10"	4" Min THREAD LENGTH
18"	4" Min THREAD LENGTH
20"	4" Min THREAD LENGTH
22"	4" Min THREAD LENGTH
26"	4" Min THREAD LENGTH
36"	4" Min THREAD LENGTH
** 2 3/4"	2" Min THREAD LENGTH
** 19"	4" Min THREAD LENGTH

\*\* For nested rail applications.



**PLAN**



**ELEVATION  
END CAP  
(TYPE A)**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
STANDARD HARDWARE**

NO SCALE

RSP A77M1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77M1**

2010 REVISED STANDARD PLAN RSP A77M1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	28	65

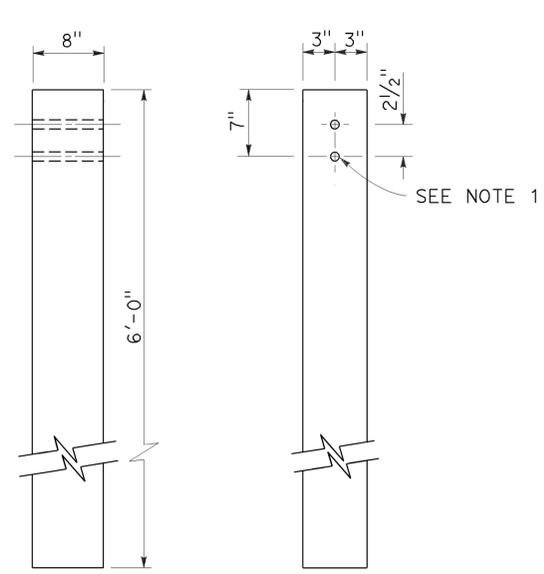
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

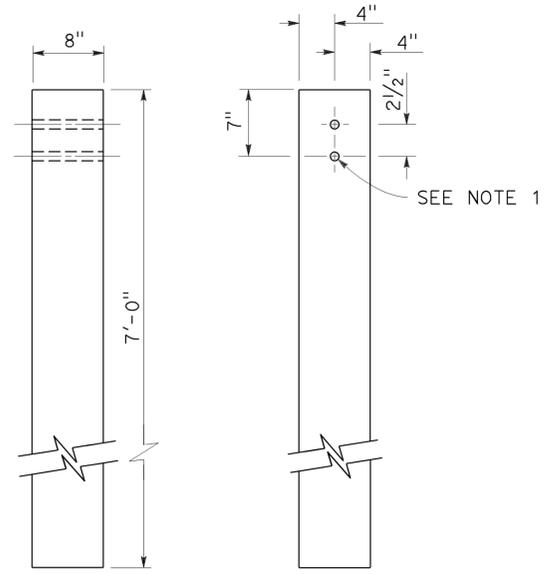
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REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

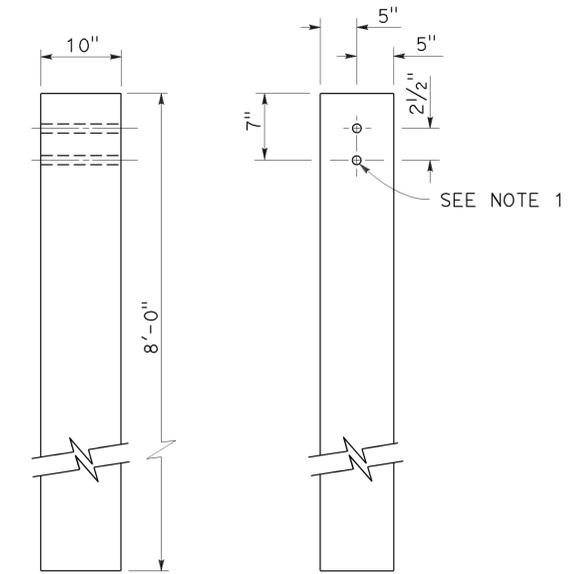
TO ACCOMPANY PLANS DATED 12-9-13



SIDE      FRONT  
6" x 8" WOOD POST  
See Note 3



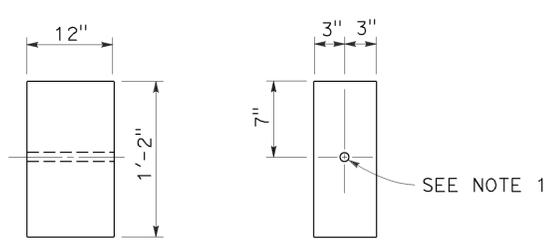
SIDE      FRONT  
8" x 8" WOOD POST  
See Note 4



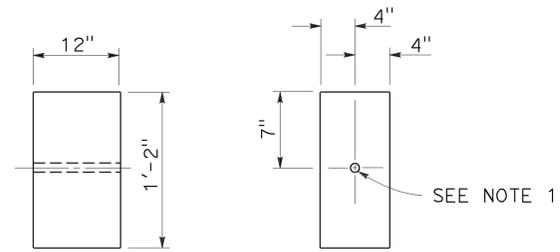
SIDE      FRONT  
10" x 10" WOOD POST  
See Note 5

**NOTES:**

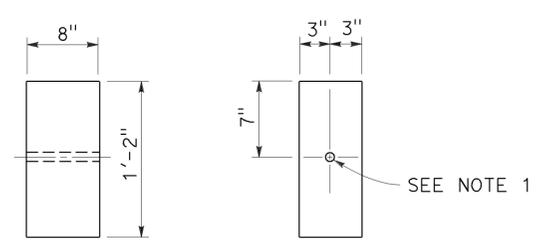
1. All holes in wood posts and blocks shall be  $\frac{3}{4}$ " Dia  $\pm$   $\frac{1}{16}$ ".
2. Dimensions shown for wood post are nominal.
3. This post and block combination used for standard line post sections of MGS.
4. This post and 8" x 12" block combination used for line post sections of MGS on narrow roadways.
5. This post and 8" x 12" block combination is typically used where strengthened line post sections of MGS are warranted to shield fixed objects.
6. See Revised Standard Plan RSP A77L3 for use of 6" x 8" and 8" x 8" wood blocks.



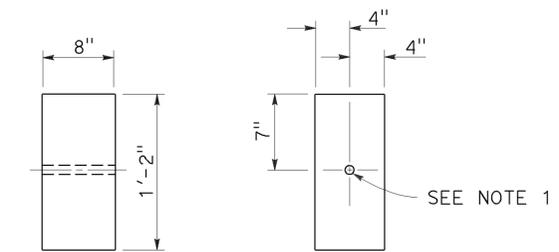
SIDE      FRONT  
6" x 12" WOOD BLOCK  
See Note 3



SIDE      FRONT  
8" x 12" WOOD BLOCK



SIDE      FRONT  
6" x 8" WOOD BLOCK  
Only for use with metal beam guard rail see Note 6



SIDE      FRONT  
8" x 8" WOOD BLOCK  
Only for use with metal beam guard rail see Note 6

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**MIDWEST GUARDRAIL SYSTEM  
WOOD POST AND  
WOOD BLOCK DETAILS**

NO SCALE

RSP A77N1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77N1**

2010 REVISED STANDARD PLAN RSP A77N1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	138	50.0/63.4	29	65

**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

November 15, 2013  
PLANS APPROVAL DATE

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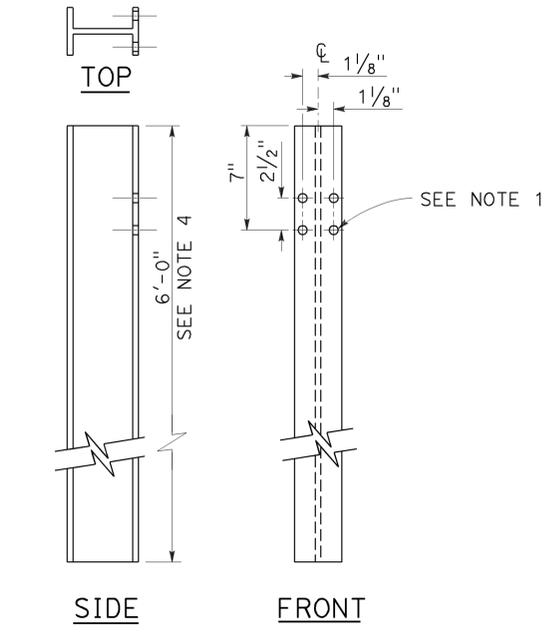
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 12-9-13

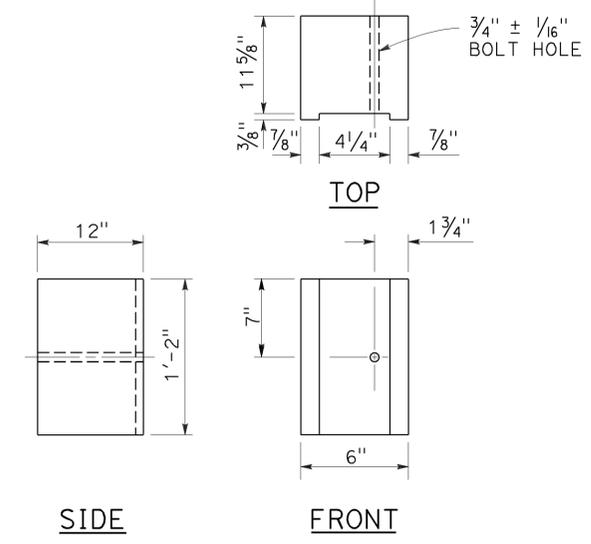
**NOTES:**

1. All holes in steel post shall be  $\frac{13}{16}$ " Dia maximum.
2. Dimensions shown for wood block are nominal.
3. Notched face of block faces steel post.
4. 6'-0" length posts to be used for typical roadway installation. See Revised Standard Plan RSP A77N3.
5. See Revised Standard Plan RSP A77L3 for use of 6" x 8" and 8" x 8" notched wood blocks.
6. This post and 8" x 12" block combination to be used for line post sections of MGS on narrow roadways and where strengthened line post sections of MGS are warranted to shield fixed objects.

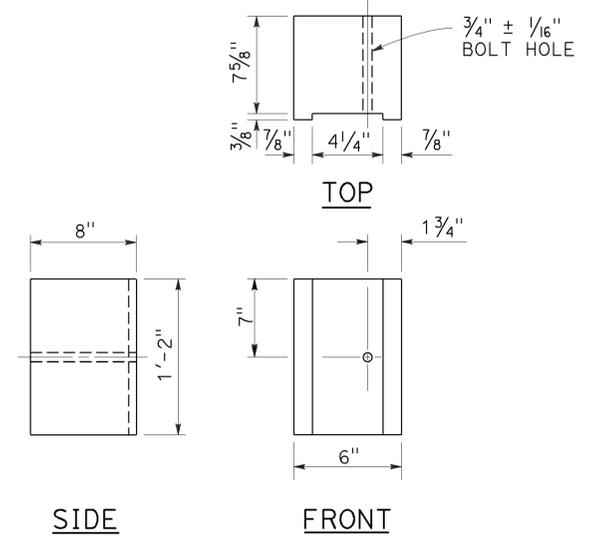
2010 REVISED STANDARD PLAN RSP A77N2



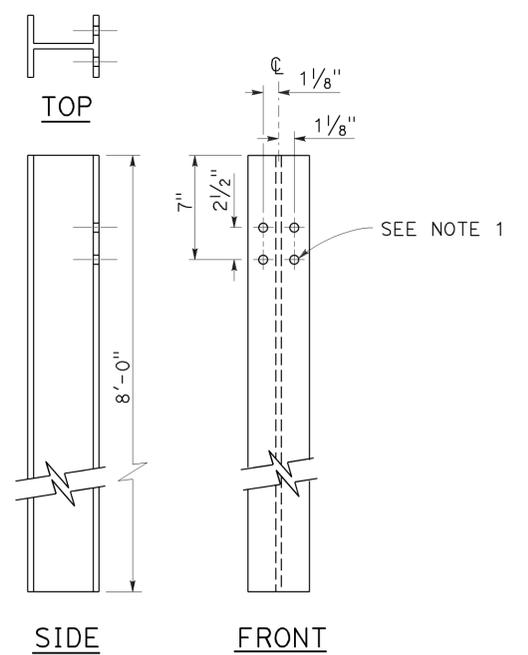
**W6 x 9 OR W6 x 8.5**  
**STEEL POST**  
See Note 4



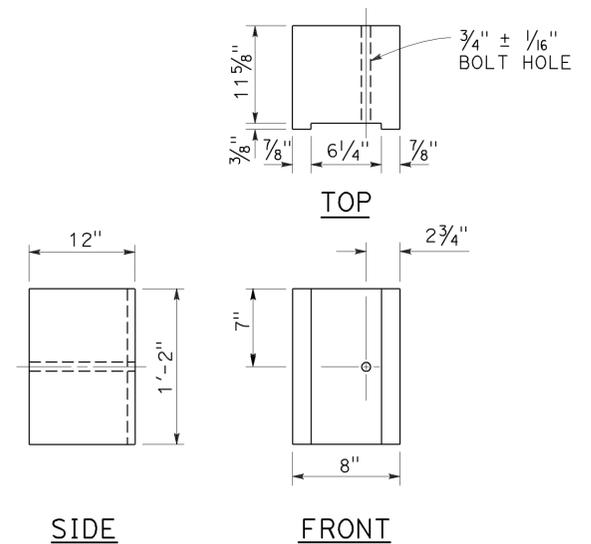
**6" x 12"**  
**NOTCHED WOOD BLOCK**  
See Notes 2 and 3



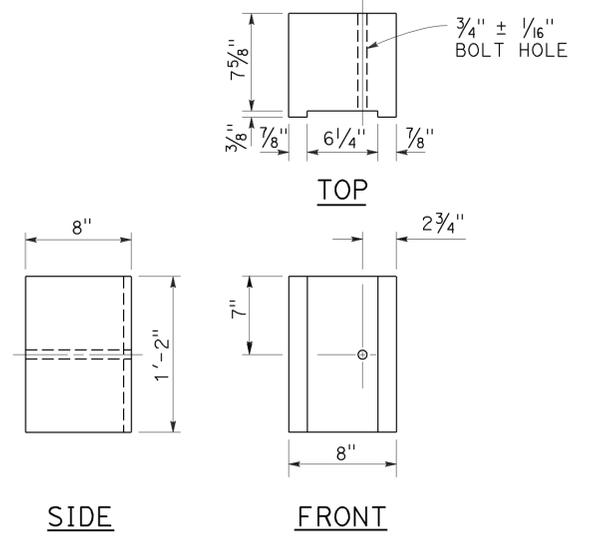
**6" x 8"**  
**NOTCHED WOOD BLOCK**  
Only for use with metal beam guard railing. See Note 5



**W6 x 15**  
**STEEL POST**  
See Note 6



**8" x 12"**  
**NOTCHED WOOD BLOCK**  
See Notes 2 and 3



**8" x 8"**  
**NOTCHED WOOD BLOCK**  
Only for use with metal beam guard railing. See Note 5

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM**  
**STEEL POST AND**  
**NOTCHED WOOD BLOCK DETAILS**

NO SCALE

RSP A77N2 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77N2  
DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

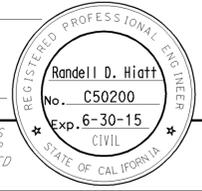
**REVISED STANDARD PLAN RSP A77N2**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	30	65

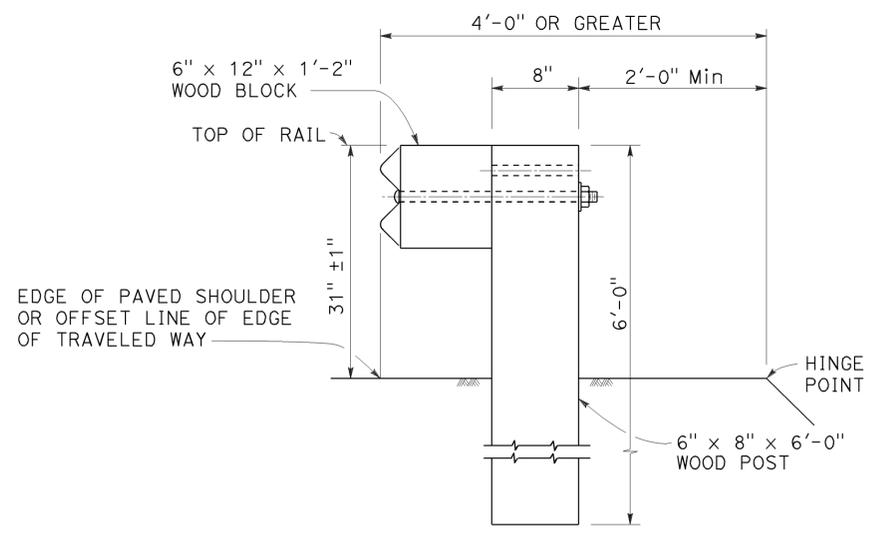
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

November 15, 2013  
PLANS APPROVAL DATE

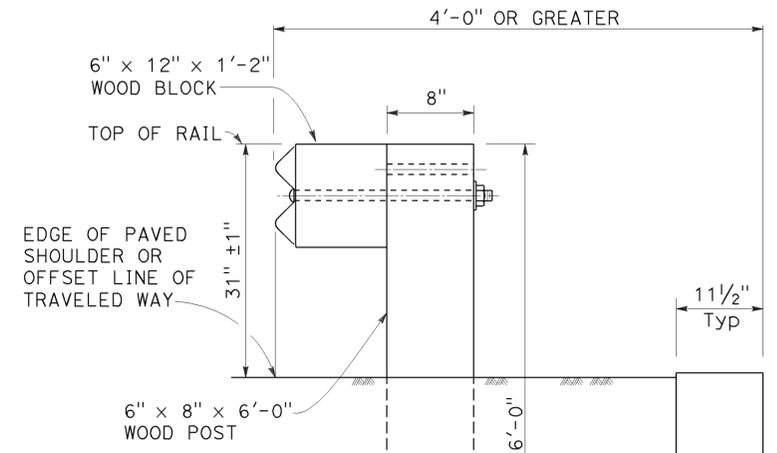
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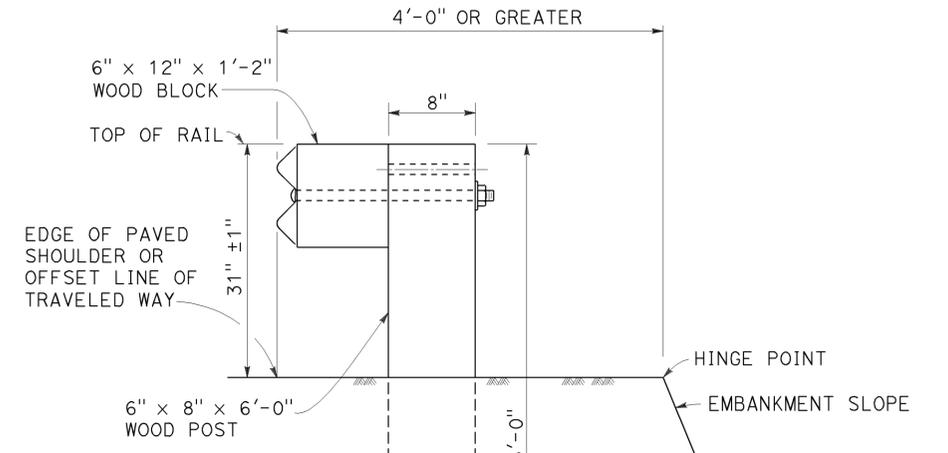
TO ACCOMPANY PLANS DATED 12-9-13



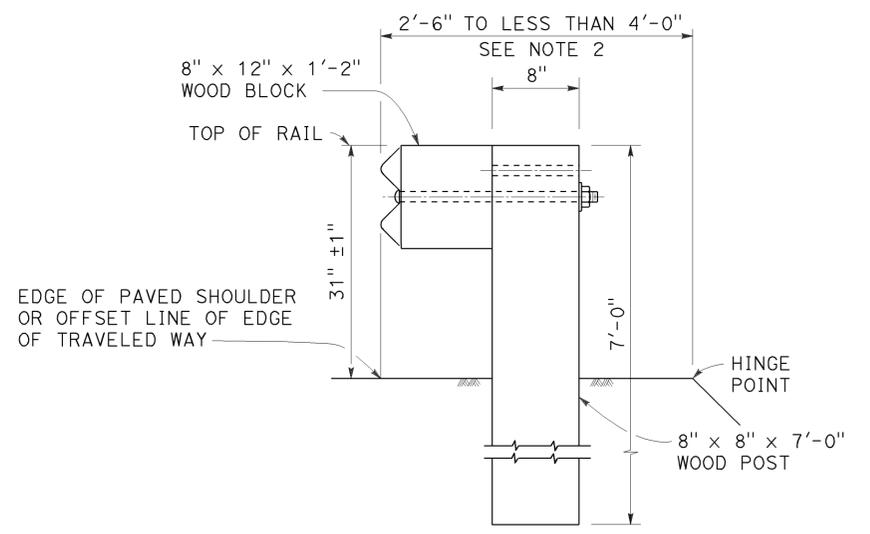
**DETAIL A**  
**TYPICAL ROADWAY**  
**INSTALLATION**  
See Note 1



**DETAIL C**



**DETAIL D**



**DETAIL B**  
**NARROW ROADWAY**  
**INSTALLATION**  
See Note 1

**POST EMBEDMENT**

**INSTALLATION AT EARTH RETAINING WALLS**

**NOTES:**

1. These installation details also applicable to steel line post installations. For Detail A, C, and D, where steel line post installations are constructed, W6 x 8.5 or W6 x 9 steel post, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks are to be used in place of the size of wood post and wood block shown. For Detail B, where steel line post installations are constructed, W6 x 15 steel post, 8'-0" in length, with 8" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks are to be used in place of the size of wood post and wood block shown. For additional installation details, see Revised Standard Plan RSP A77L1 and RSP A77L2.
2. Where the distance between the face of the rail and the hinge point is less than 2'-6", see the Project Plans for special details.
3. For dike positioning with MGS installations, see Revised Standard Plan RSP A77N4.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM**  
**TYPICAL LINE POST**  
**EMBEDMENT AND**  
**HINGE POINT OFFSET DETAILS**

NO SCALE

RSP A77N3 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77N3  
DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77N3**

2010 REVISED STANDARD PLAN RSP A77N3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	31	65

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

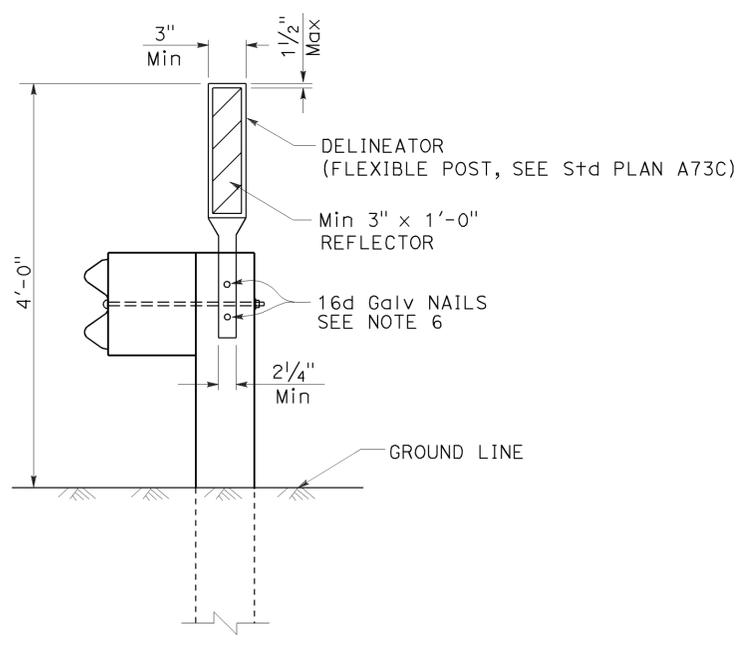
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REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

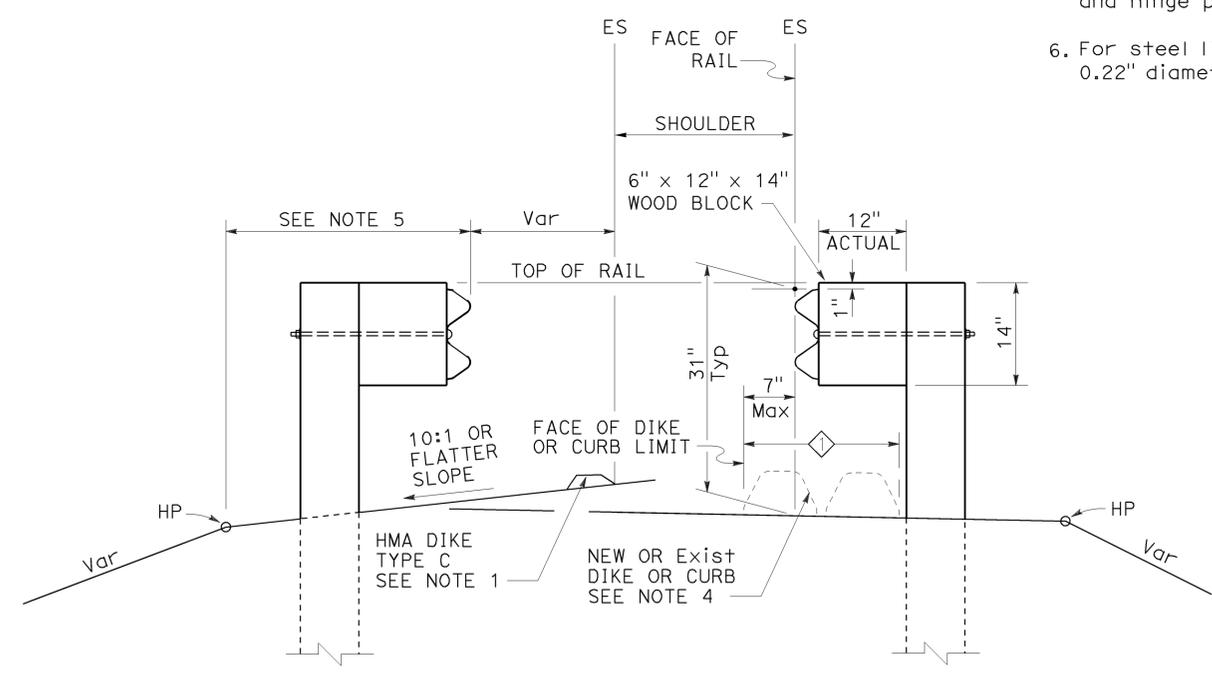
TO ACCOMPANY PLANS DATED 12-9-13

**NOTES:**

1. When necessary to place dike more than 7" in front of face of MGS, only Type C dike may be used. For dike details, see Revised Standard Plan RSP A87B.
2. For standard railing post embedment, see Revised Standard Plan RSP A77N3.
3. MGS delineation to be used where shown on the Project Plans.
4. When dike or curb is placed under MGS, the maximum height of the dike or curb shall be 6". Mountable dike should not be used. For dike and curb details, see Revised Standard Plans RSP A87A and RSP A87B.
5. For details of typical distance between the face of rail and hinge point, see Revised Standard Plan RSP A77N3.
6. For steel line posts, use 1/4" - 20 self-tapping screws in 0.22" diameter holes or 1/4" bolts in 3/32" diameter holes.



**MGS DELINEATION**  
See Note 3



**DIKE POSITIONING**  
See Note 1

◇ PERMISSIBLE DIKE OR CURB PLACEMENT AREA

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
TYPICAL RAILING DELINEATION  
AND DIKE POSITIONING DETAILS**  
NO SCALE

RSP A77N4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77N4**

2010 REVISED STANDARD PLAN RSP A77N4



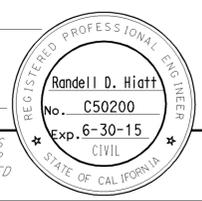
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	33	65

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

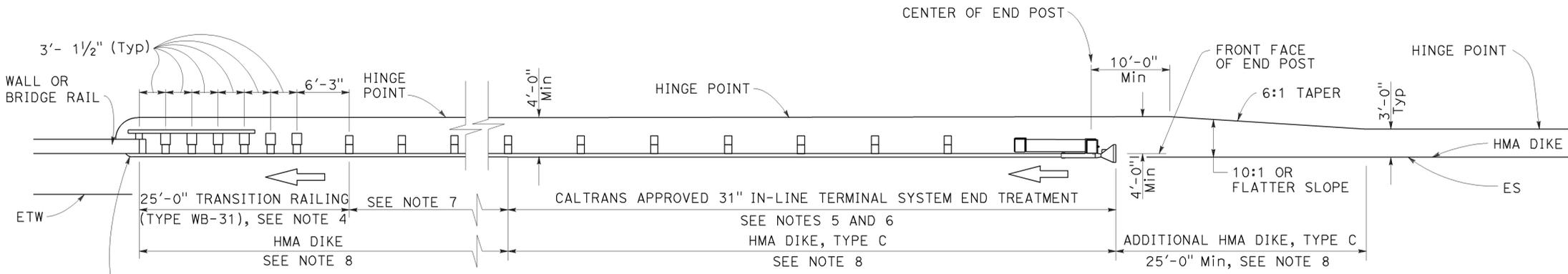
July 19, 2013  
PLANS APPROVAL DATE

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TO ACCOMPANY PLANS DATED 12-9-13

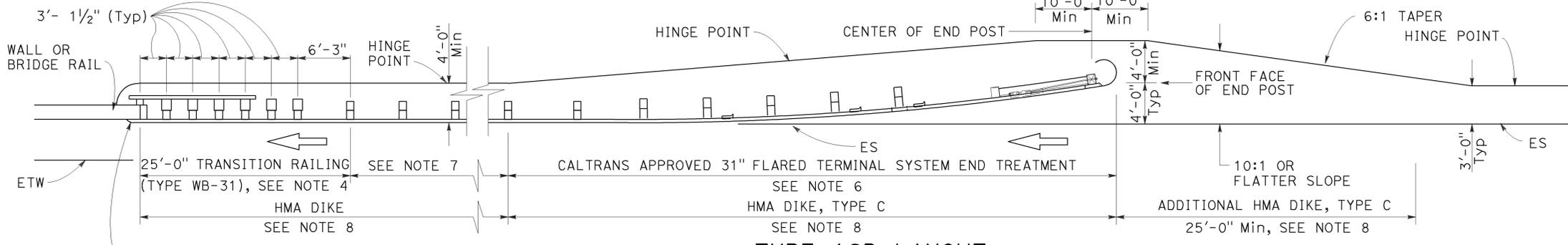


2010 REVISED STANDARD PLAN RSP A77Q1



**TYPE 12A LAYOUT**

(MGS installation at structure approach with 31" in-line end treatment at traffic approach end of railing)  
See Notes 5 and 6  
SEE NOTE 8  
SEE NOTE 9



**TYPE 12B LAYOUT**

(MGS installation at structure approach with 31" Flared end treatment at traffic approach end of railing)  
SEE NOTE 6  
SEE NOTE 8  
SEE NOTE 9

**NOTES:**

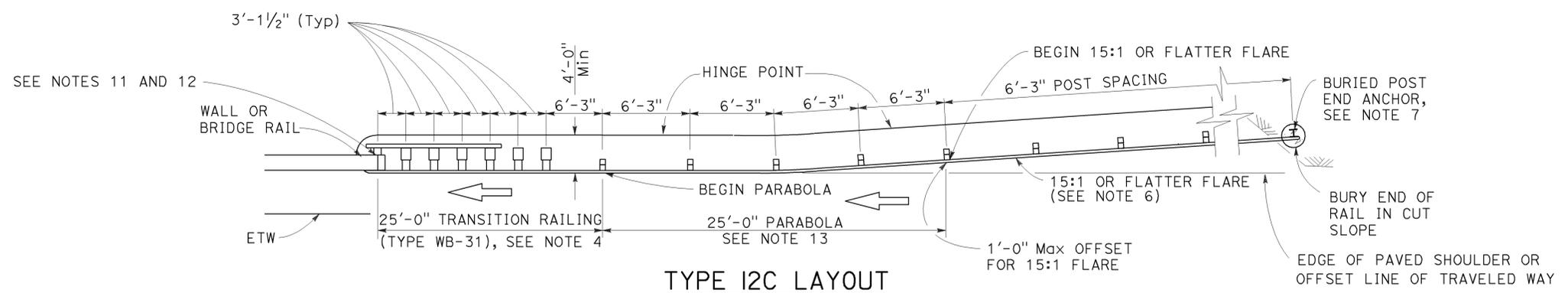
- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Types 12A and 12B Layouts, see Revised Standard Plan RSP A77U4.
- 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
- The type 31" of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height, side slopes, or other fixed objects), it may be advisable to construct additional guard railing (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and end treatment. A 12.5 degree angle of departure can be drawn on the Project Plans from the edge of traveled way through the outer most point of the fixed object to determine the additional length of railing needed.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12A or Type 12B Layouts are typically used:
  - To the right of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
  - To the left of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
  - To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
  - To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
- See Revised Standard Plan RSP A77Q3 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
- For additional details of typical connections to bridge rail, see Connection Detail AA on Revised Standard Plans RSP A77U1 and RSP A77U2 and Connection Detail FF on Revised Standard Plans RSP A77V1 and RSP A77V2.
- For additional details of a typical connection to walls or abutments, see Revised Standard Plan RSP A77U3.

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**MIDWEST GUARDRAIL SYSTEM  
TYPICAL LAYOUTS FOR  
STRUCTURE APPROACH**

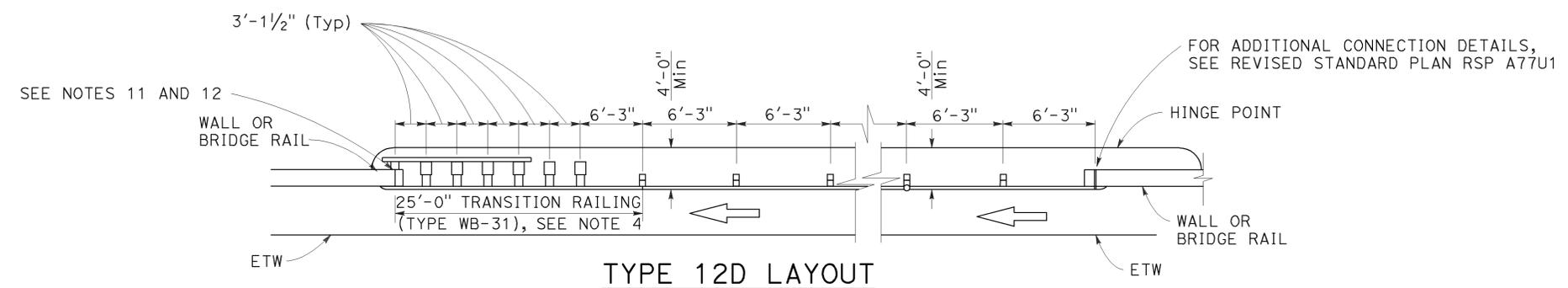
NO SCALE

TO ACCOMPANY PLANS DATED 12-9-13



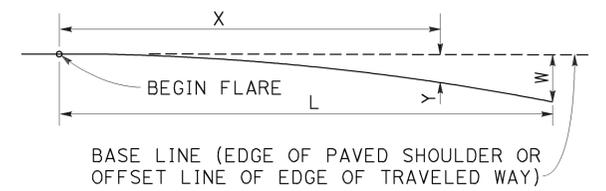
**TYPE 12C LAYOUT**

(MGS installation at structure approach with a Buried end anchor treatment at traffic approach end of railing)  
See Notes 8 and 9



**TYPE 12D LAYOUT**

(Continuous MGS installation between structures)  
See Notes 5 and 9

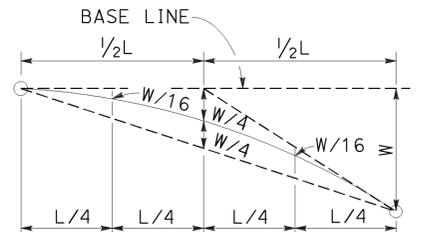


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

$$Y = \frac{WX^2}{L^2}$$

Y = OFFSET FROM BASE LINE  
W = MAXIMUM OFFSET  
X = DISTANCE ALONG BASE LINE  
L = LENGTH OF FLARE

**PARABOLIC FLARE OFFSETS**



**TYPICAL PARABOLIC LAYOUT**

**NOTES:**

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" m wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Types 12C and 12D Layouts, see Revised Standard Plan RSP A77U4.
- Type 12D layout is typically used where continuous MGS is recommended between structures.
- The 15:1 or flatter flare for Type 12C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS with the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 12C Layout, see Revised Standard Plan RSP A77T2.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12C Layout is typically used:
  - To the right of approaching traffic, at the end of the structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
  - To the left of approaching traffic, at each of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
  - To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
  - To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
- See Revised Standard Plan RSP A77Q3 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
- For additional details of typical connections to bridge rail, see Connection Detail AA on Revised Standard Plans RSP A77U1 and RSP A77U2 and Connection Detail FF on Revised Standard Plans RSP A77V1 and RSP A77V2.
- For additional details of a typical connection to walls or abutments, see Revised Standard Plan RSP A77U3.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
TYPICAL LAYOUTS FOR  
STRUCTURE APPROACH  
AND BETWEEN STRUCTURES**

NO SCALE

2010 REVISED STANDARD PLAN RSP A77Q2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	35	65

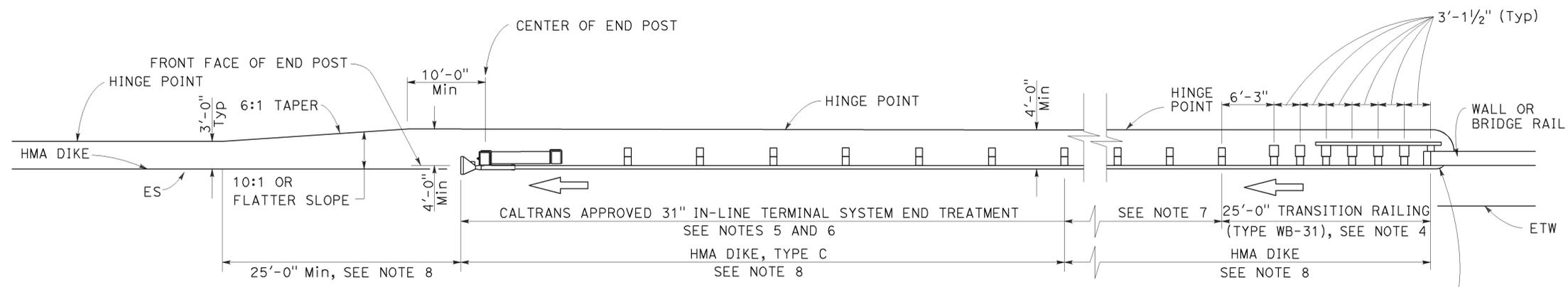
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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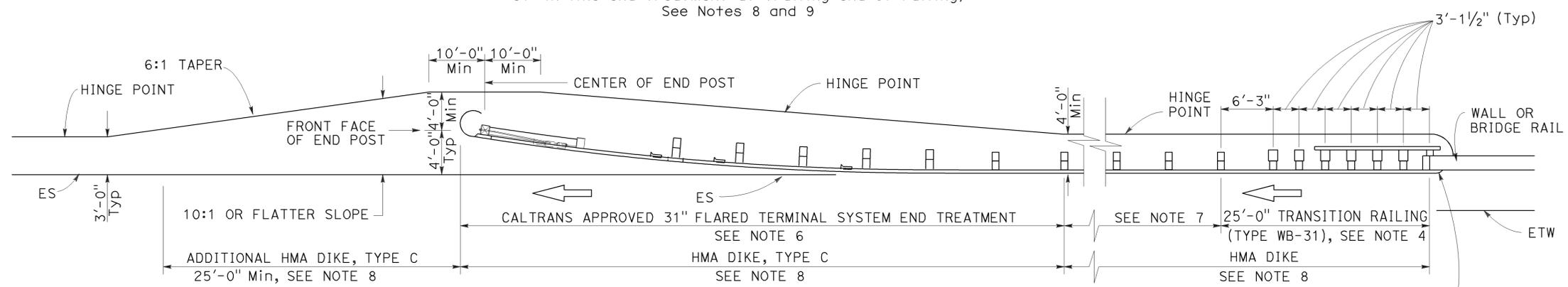
REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 12-9-13



**TYPE 12AA LAYOUT**

(MGS installation at structure departure with 31" in-line end treatment at trailing end of railing)  
See Notes 8 and 9



**TYPE 12BB LAYOUT**

(MGS installation at structure departure with 31" flared end treatment at trailing end of railing)  
See Notes 8 and 9

**NOTES:**

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Types 12AA and 12BB Layouts, see Revised Standard Plan RSP A77U4.
- 31" in-line terminal system treatments are used where site conditions will not accommodate a 31" flared end treatment.
- The type of 31" terminal system to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height, side slopes, other fixed objects), it may be advisable to construct additional MGS (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and 31" end treatments.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12AA or Type 12BB Layouts are typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
- For additional details of typical connections to bridge rail, see Connection Detail CC on Revised Standard Plan RSP A77U2 and Connection Detail HH on Revised Standard Plan RSP A77V2.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**MIDWEST GUARDRAIL SYSTEM  
TYPICAL LAYOUTS FOR  
STRUCTURE DEPARTURE**  
NO SCALE

RSP A77Q4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77Q4**

2010 REVISED STANDARD PLAN RSP A77Q4

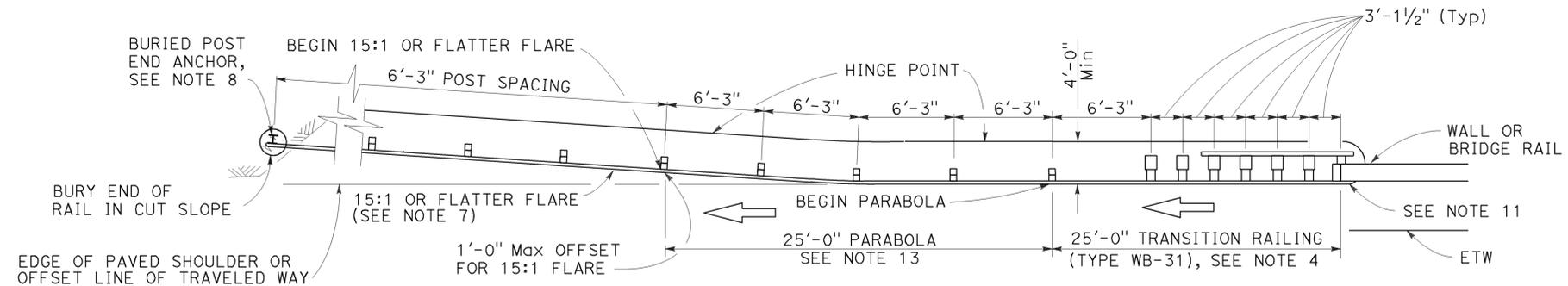
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	36	65

Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

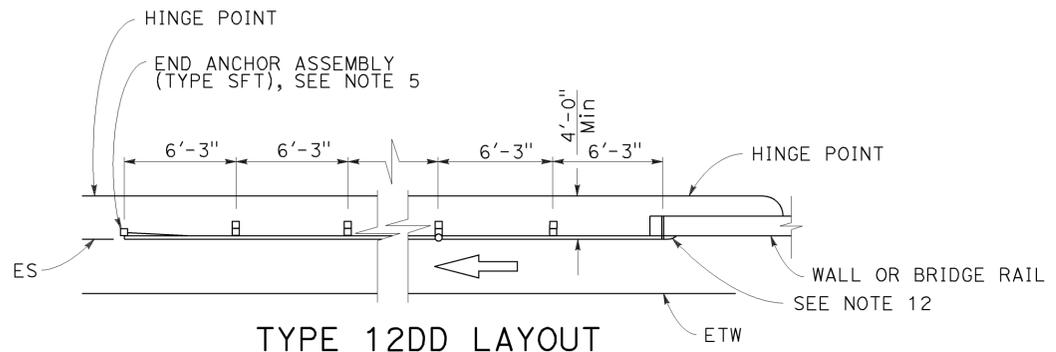
REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

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**TYPE 12CC LAYOUT**

(MGS installation at structure departure with a Buried end anchor treatment at trailing end of railing)  
See Notes 9 and 10



**TYPE 12DD LAYOUT**

(MGS installation at structure departure With end anchor assembly at trailing end of railing)  
See Notes 6 and 9

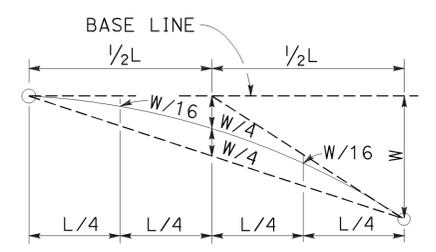


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

$Y = \frac{WX^2}{L^2}$

Y = OFFSET FROM BASE LINE  
W = MAXIMUM OFFSET  
X = DISTANCE ALONG BASE LINE  
L = LENGTH OF FLARE

**PARABOLIC FLARE OFFSETS**



**TYPICAL PARABOLIC LAYOUT**

**NOTES:**

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MSG post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Type 12CC Layout, see Revised Standard Plan RSP A77U4.
- For details of End Anchor Assembly (Type SFT) used with Type 12DD Layout, see Revised Standard Plan RSP A77S1.
- Type 12DD layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is equal to or greater than 40 feet and MGS is recommended (embankment height, side slopes, other fixed objects). Length of railing to be equal to multiples of 12'-6". For MGS connection details to bridge rail, see Revised Standard Plans RSP A77U1 and RSP A77V1. For MGS connection details to wall, see Revised Standard Plan RSP A77U3.
- The 15:1 or flatter flare for Type 12CC Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 12CC Layout, see Revised Standard Plan RSP A77T2.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12CC Layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
- For additional details of a typical connection to bridge rail for Layout Type 12CC, see Connection Detail CC on Revised Standard Plan RSP A77U2 and Connection Detail HH on Revised Standard Plan RSP A77V2.
- For additional details of a typical connection to bridge rail for Layout Type 12DD, see Connection Detail BB on Revised Standard Plan RSP A77U1 and Connection Detail GG on Revised Standard Plan RSP A77V1.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
TYPICAL LAYOUTS FOR  
STRUCTURE DEPARTURE**

NO SCALE

RSP A77Q5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77Q5**

2010 REVISED STANDARD PLAN RSP A77Q5

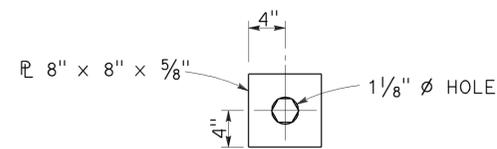
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	37	65

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

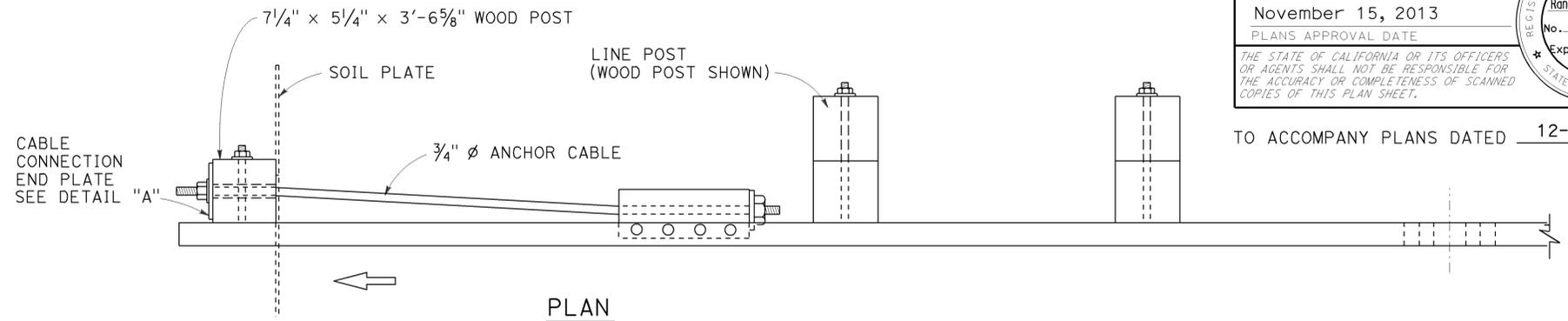
November 15, 2013  
PLANS APPROVAL DATE

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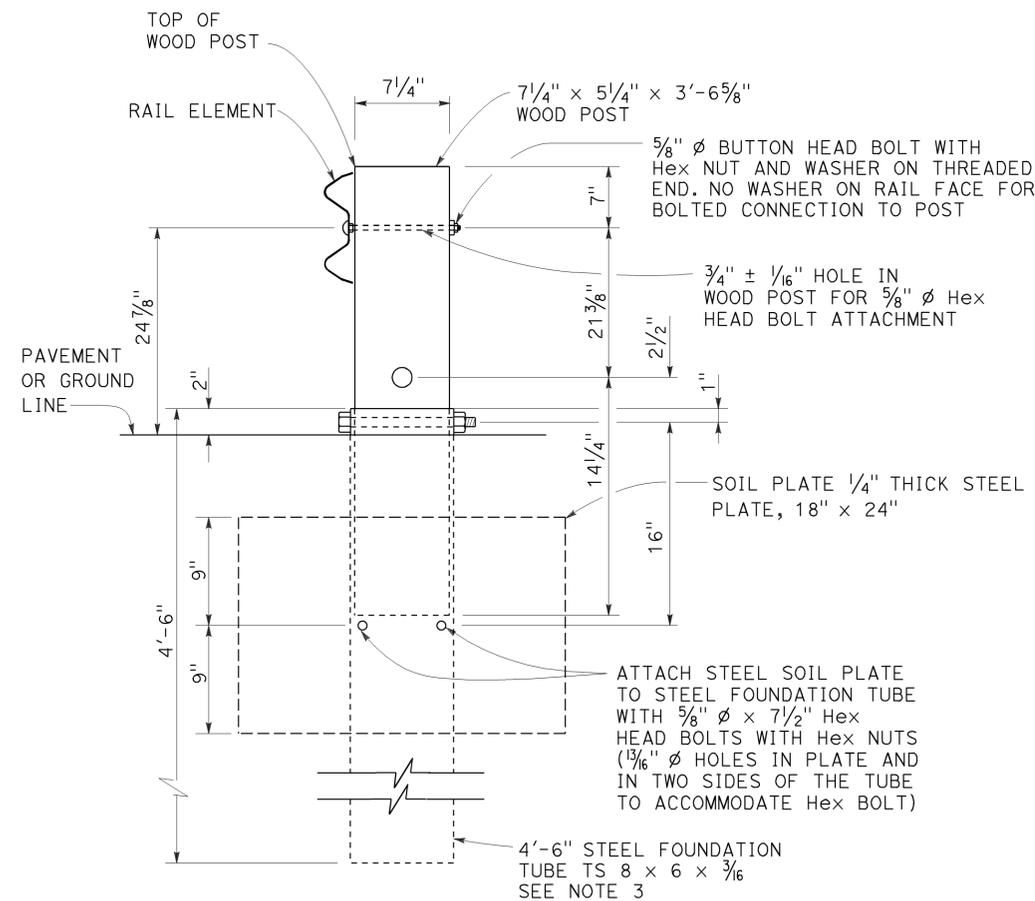
TO ACCOMPANY PLANS DATED 12-9-13



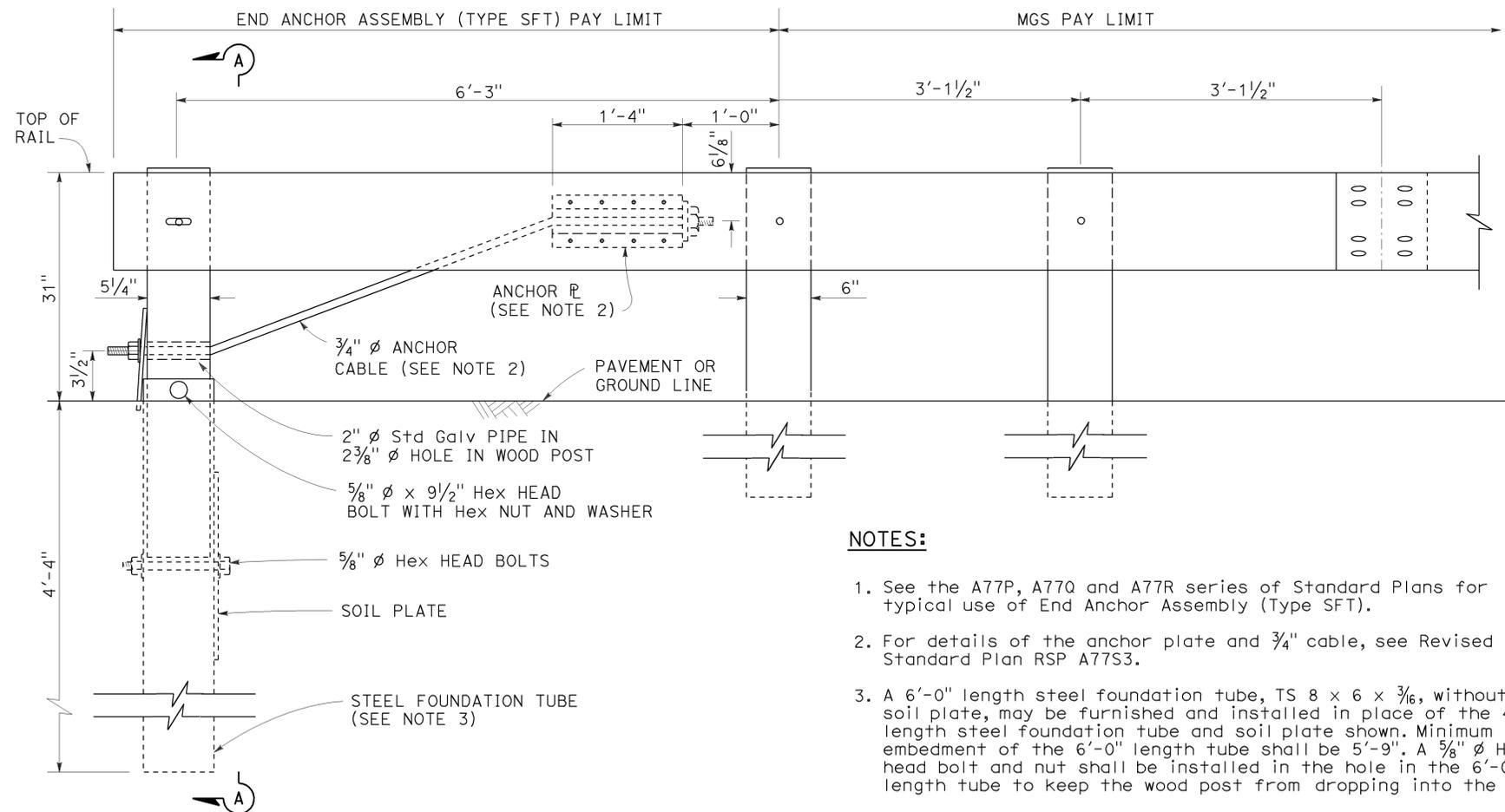
**DETAIL "A"**  
**CABLE CONNECTION**  
**END PLATE**



**PLAN**



**SECTION A-A**



**ELEVATION**

**END ANCHOR**  
**ASSEMBLY (TYPE SFT)**

See Note 1

**NOTES:**

1. See the A77P, A77Q and A77R series of Standard Plans for typical use of End Anchor Assembly (Type SFT).
2. For details of the anchor plate and 3/4" cable, see Revised Standard Plan RSP A77S3.
3. A 6'-0" length steel foundation tube, TS 8 x 6 x 3/16, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A 5/8" diameter hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
4. Install line post, steel foundation tube and soil plate in soil.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM**  
**END ANCHOR ASSEMBLY**  
**(TYPE SFT)**

NO SCALE

RSP A77S1 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77S1  
DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77S1**

2010 REVISED STANDARD PLAN RSP A77S1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	38	65

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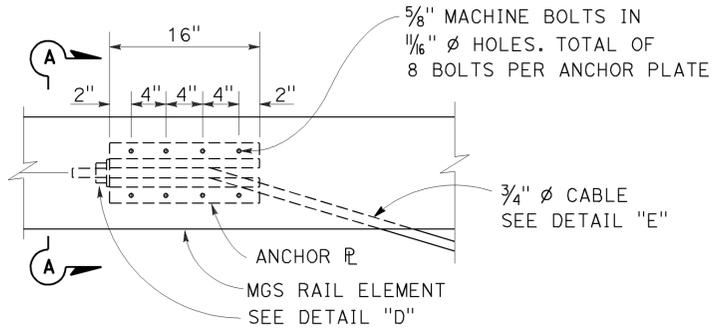
November 15, 2013  
PLANS APPROVAL DATE

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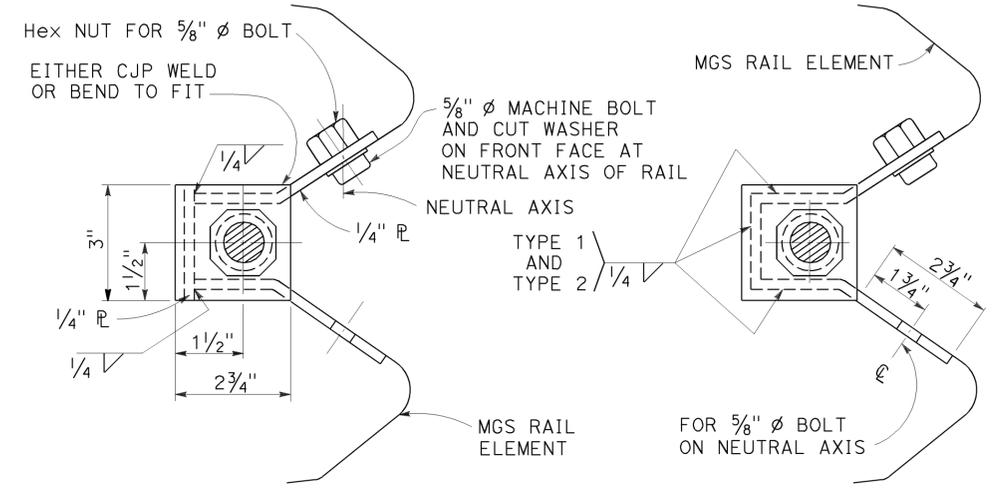
REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 12-9-13

**NOTE:**  
See Revised Standard Plans RSP A77S1, RSP A77S2 and RSP A77T1 for typical use of anchor cable and anchor plate.



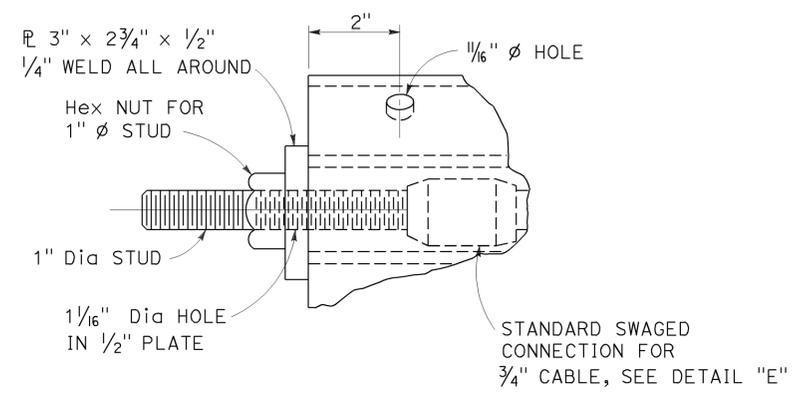
**ANCHOR PLATE DETAIL**  
(MGS shown, TBB similar)



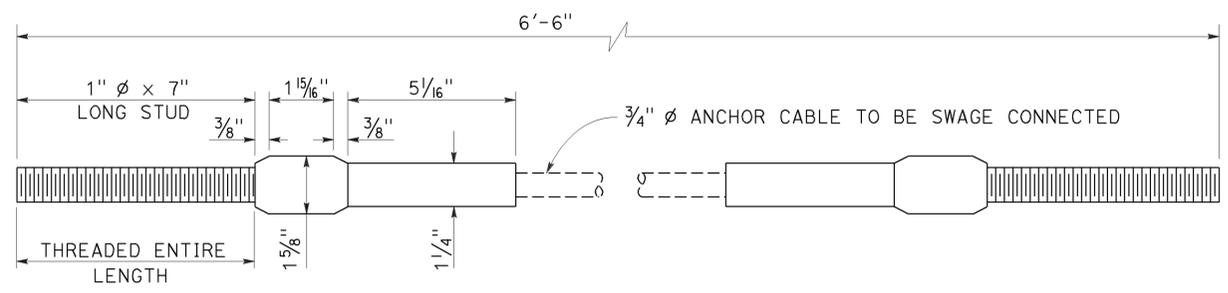
**SECTION A-A (ALTERNATIVE TYPE 1)**

**SECTION A-A (ALTERNATIVE TYPE 2)**

**NOTE:**  
Dimensioning applies to both types.



**DETAIL "D"**



**ANCHOR CABLE WITH SWAGED FITTING AND STUD**  
**DETAIL "E"**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL RAILING  
ANCHOR CABLE AND  
ANCHOR PLATE DETAILS**

NO SCALE

RSP A77S3 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77S3 DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP A77S3

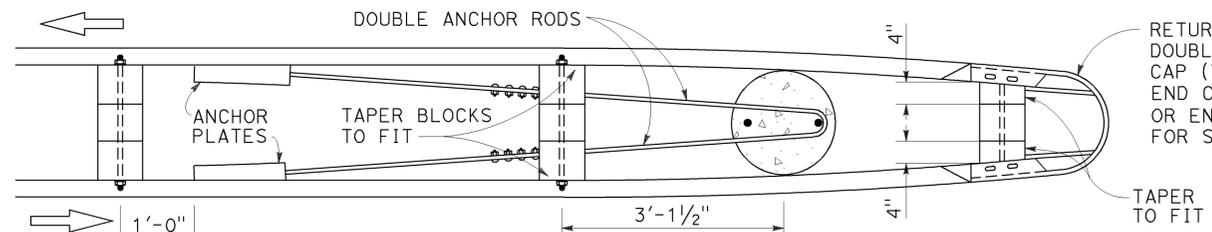
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	39	65

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

November 15, 2013  
PLANS APPROVAL DATE

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Exp. 6-30-15  
CIVIL  
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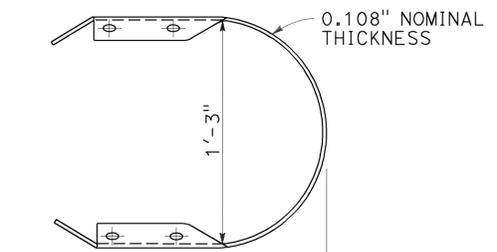


**PLAN**

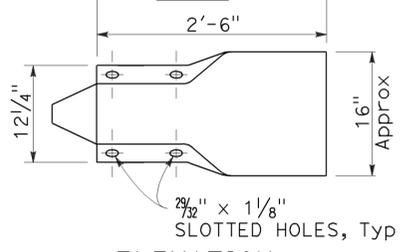
See Note 4

RETURN CAP (TYPE TA) FOR DOUBLE THRIE BEAM OR RETURN CAP (TYPE A) FOR DOUBLE MGS.  
END CAP (TYPE A) FOR SINGLE MGS OR END CAP (TYPE TC) FOR SINGLE THRIE BEAM

TAPER TO FIT



**PLAN**



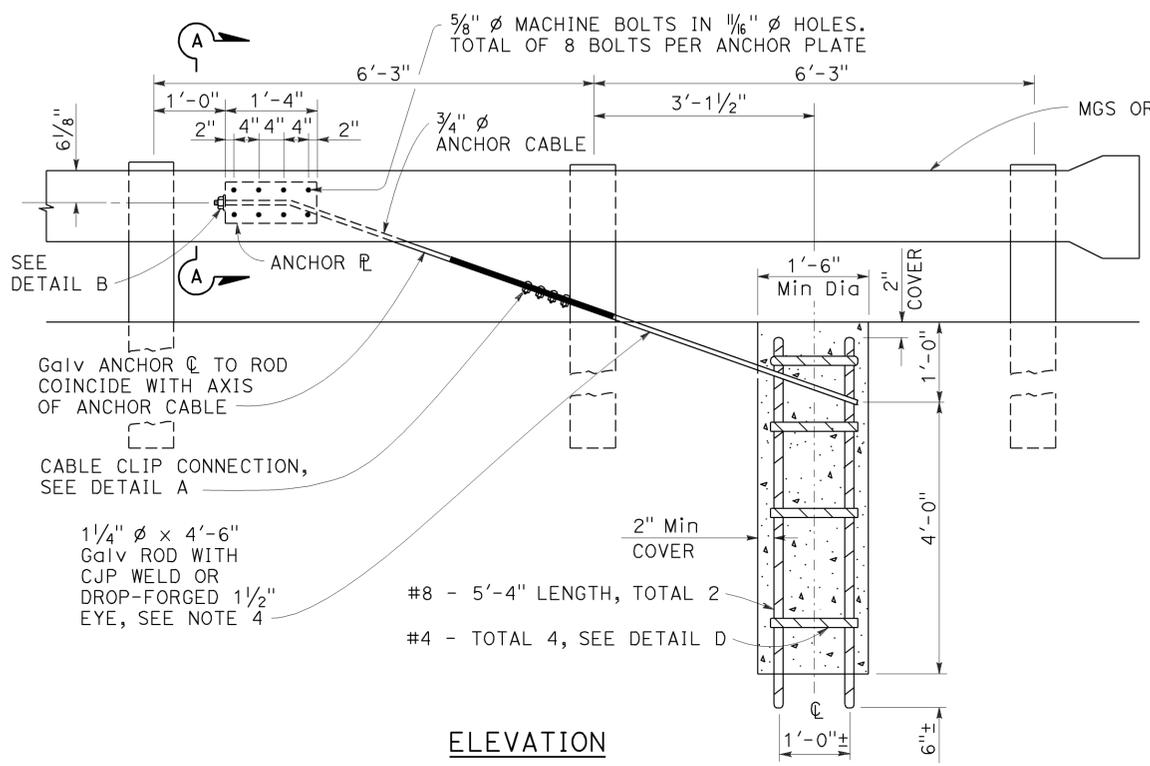
**ELEVATION**

**RETURN CAP (TYPE A)**

TO ACCOMPANY PLANS DATED 12-9-13

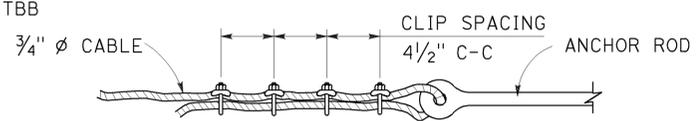
**NOTES:**

1. For typical use of this type of end anchor, see Revised Standard Plan RSP A78E2.
2. Anchor cable to be parallel to railing for straight runs of rail. Anchor cable may have angle point at anchor plate if railing is curved.
3. Anchor rod hooks to be in contact with anchor reinforcement when concrete is placed. Wire ties may be used to position anchor rods.
4. Single sided railing installations require only one anchor plate, anchor rod and anchor cable. Single sided railing will not have a rail element or blockouts on backside of line posts as shown in the plan view.



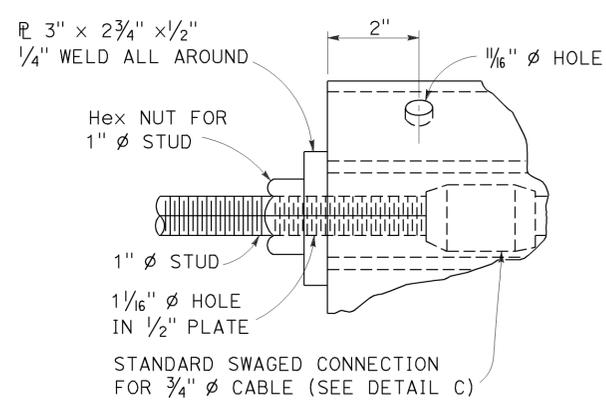
**ELEVATION**  
**END ANCHOR ASSEMBLY (TYPE CA)**

(Wood post, MGS shown, details similar for Thrie Beam Barrier.)



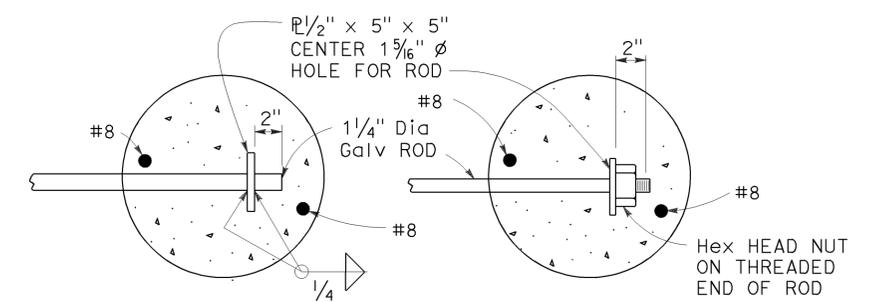
**DETAIL A**  
**CABLE CLIP CONNECTION**

"U" bolts of clip on short end of cable only  
"U" bolts tightened to 50 ft/lb torque



**DETAIL B**

STANDARD SWAGED CONNECTION FOR 3/4"  $\phi$  CABLE (SEE DETAIL C)

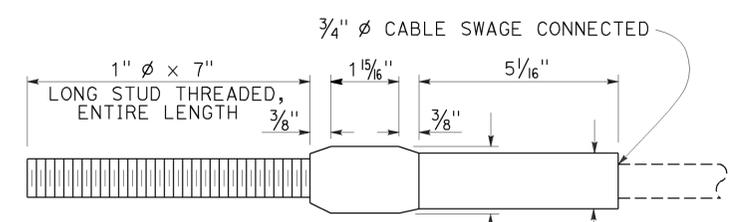


**OPTIONAL ENDS ON SINGLE ANCHOR ROD**

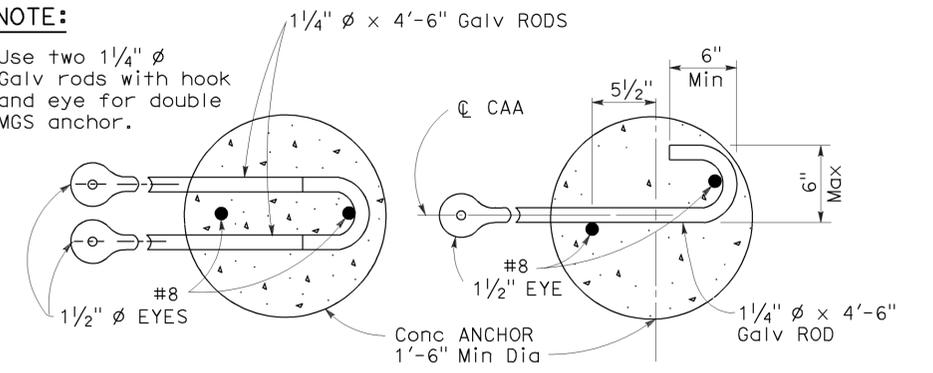
(Not to be used for double anchors)

**NOTE:**

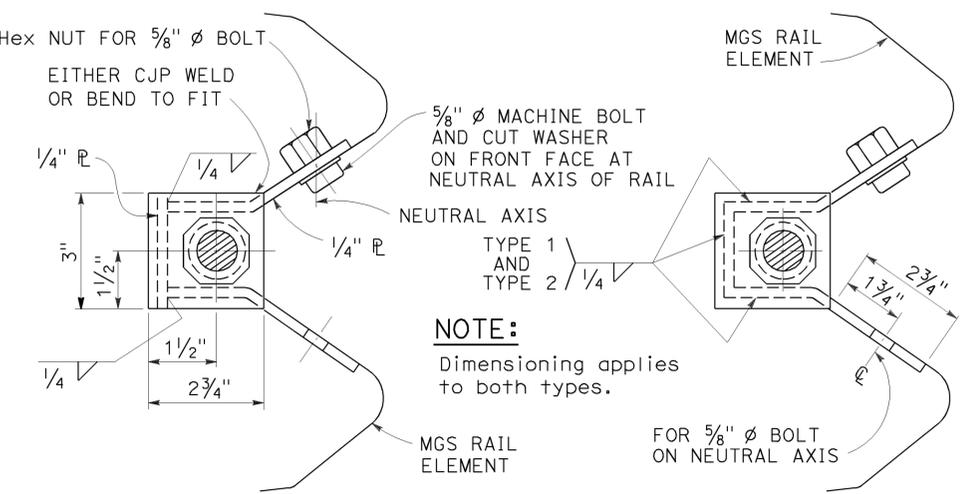
Use two 1/4"  $\phi$  Galv rods with hook and eye for double MGS anchor.



**DETAIL C**  
**ANCHOR CABLE WITH SWAGED FITTING AND STUD**



**DOUBLE ANCHOR ANCHOR RODS**      **SINGLE ANCHOR ANCHOR RODS**

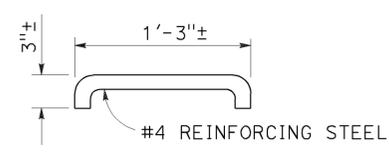


**SECTION A-A (Alternative Type 1)**

**SECTION A-A (Alternative Type 2)**

**ANCHOR PLATE DETAILS**

**NOTE:**  
Dimensioning applies to both types.



**DETAIL D**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL RAILING END ANCHOR ASSEMBLY (TYPE CA)**

NO SCALE

RSP A77T1 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77T1 DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77T1**

2010 REVISED STANDARD PLAN RSP A77T1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	40	65

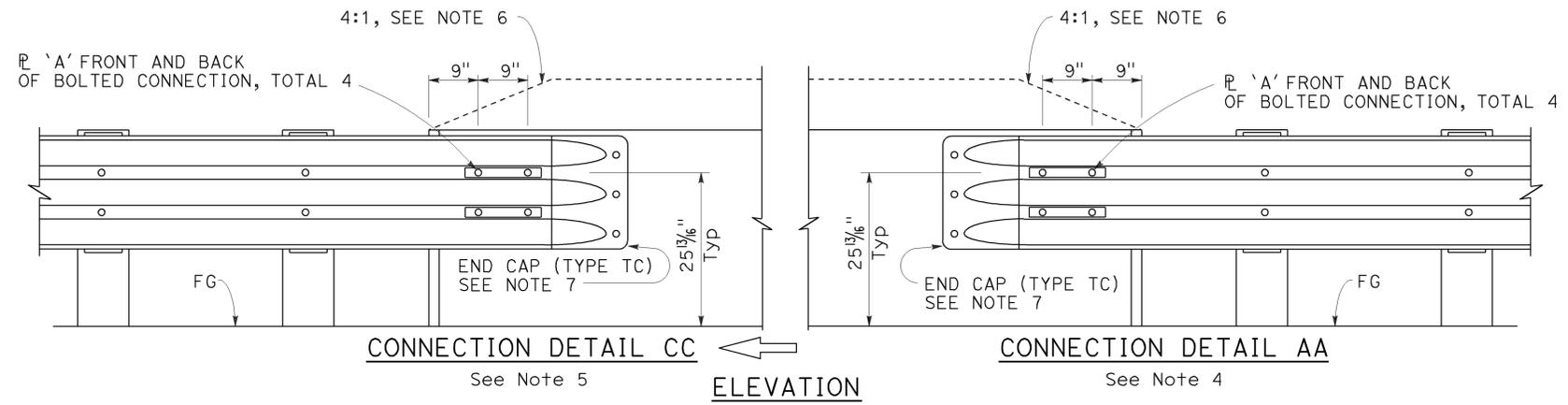
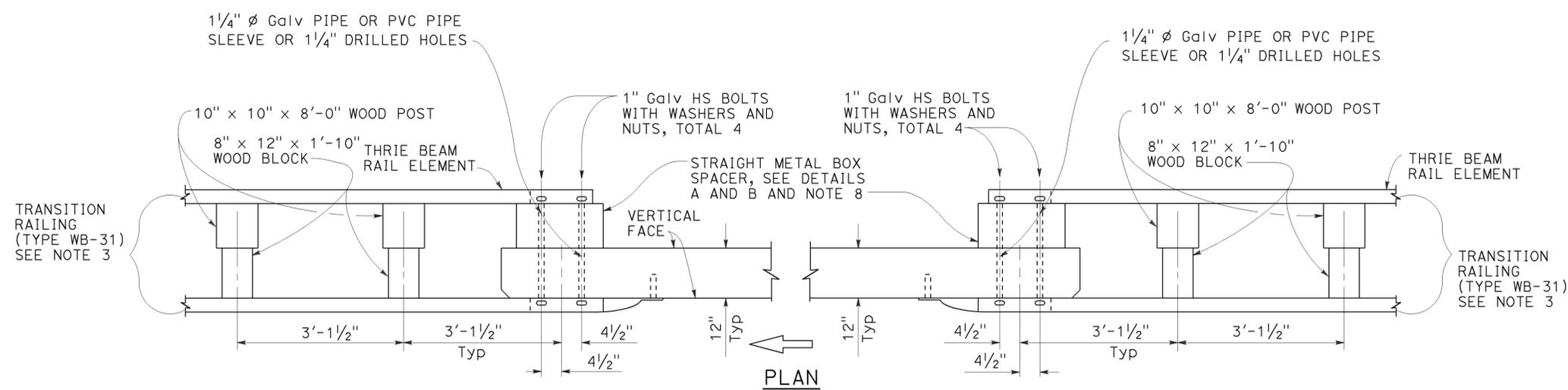
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER  
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STATE OF CALIFORNIA

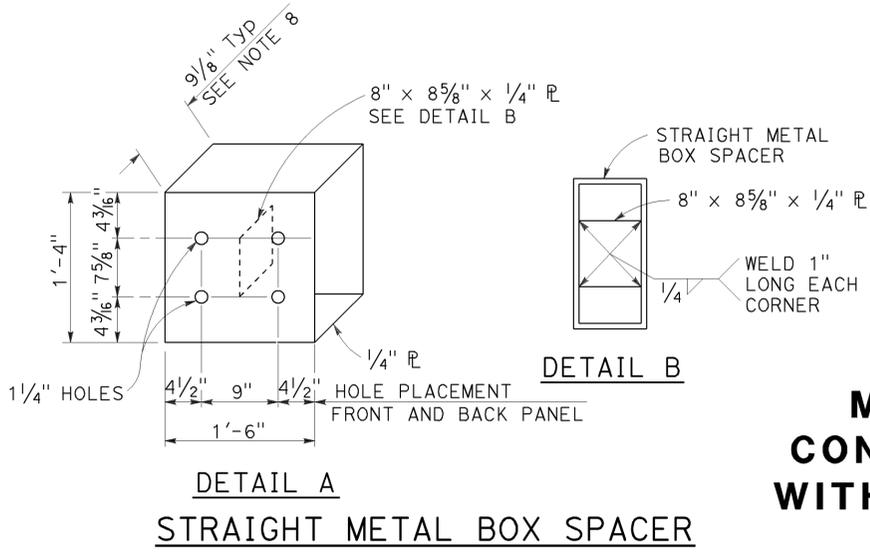
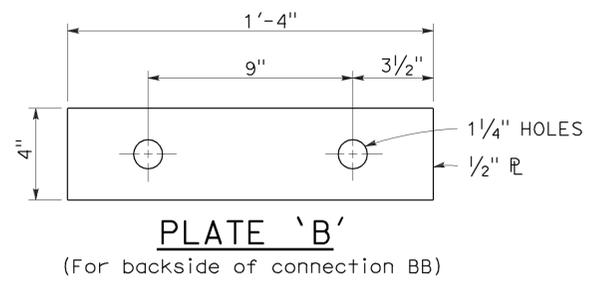
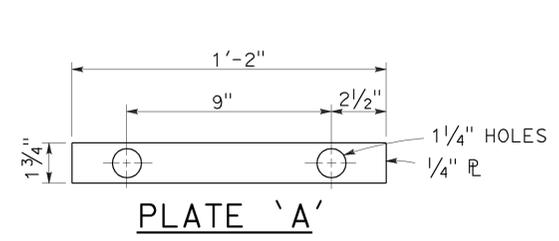
TO ACCOMPANY PLANS DATED 12-9-13



**MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK**

**NOTES:**

1. See Revised Standard Plan RSP A77U1 for additional connection details to bridges without sidewalks.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1, RSP A77N1 and RSP A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4. Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
4. For typical use of Connection Detail AA, see Layout Types 12A and 12B on Revised Standard Plan RSP A77Q1, Layout Types 12C and 12D on Revised Standard Plan RSP A77Q2, and Layout Type 12E on Revised Standard Plan RSP A77Q3.
5. For typical use of Connection Detail CC, see Layout Types 12AA and 12BB on Revised Standard Plan RSP A77Q4 and Layout Type 12CC on Revised Standard Plan RSP A77Q5.
6. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA and connection Detail CC, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
7. For details of End Cap (Type TC), see Revised Standard Plan RSP A77U4.
8. See Revised Standard Plan RSP A77U4 for additional details regarding depth dimension for straight metal box spacer.



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
CONNECTIONS TO BRIDGE RAILINGS  
WITHOUT SIDEWALKS DETAILS No. 2**

NO SCALE

2010 REVISED STANDARD PLAN RSP A77U2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	41	65

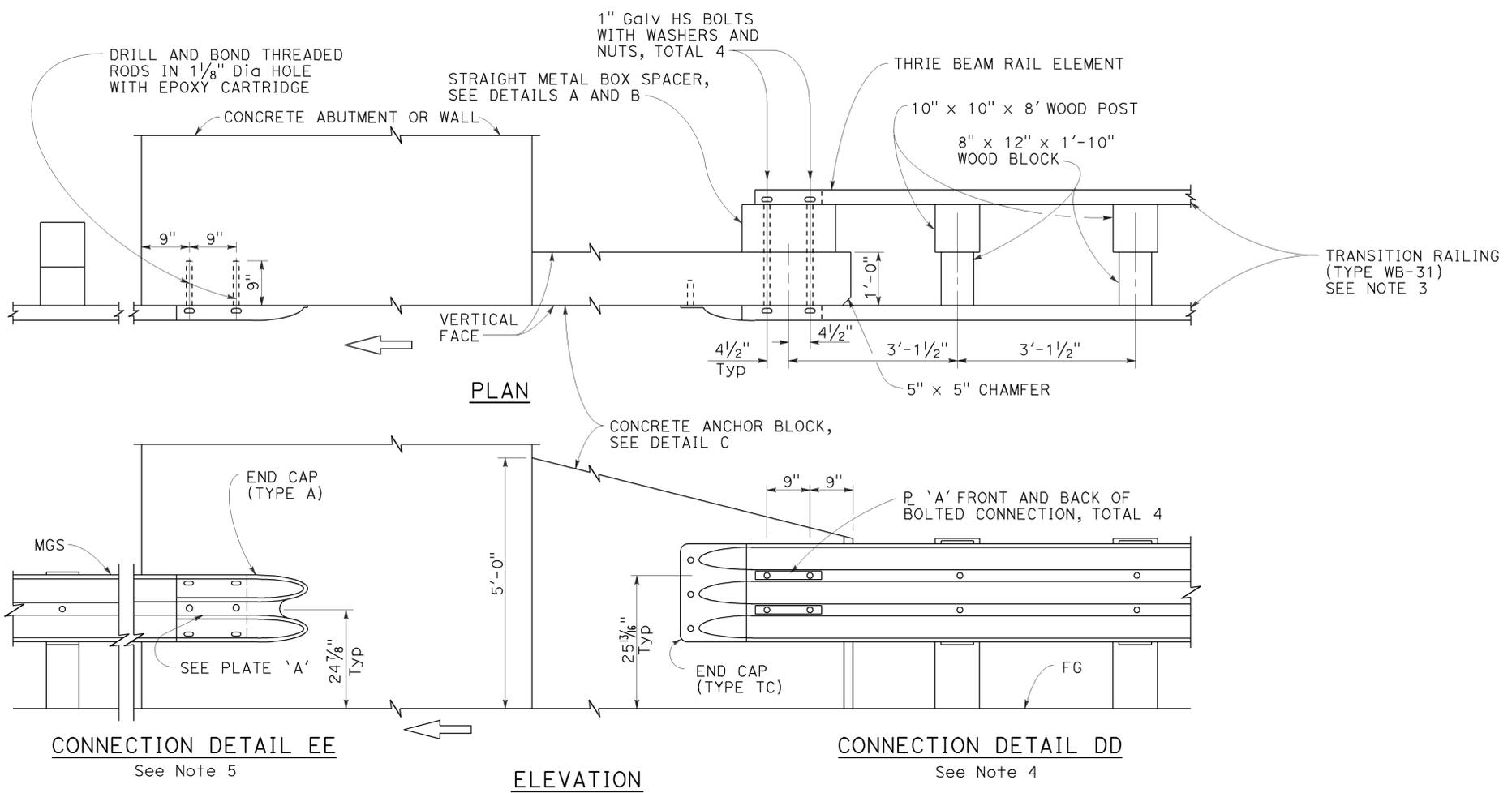
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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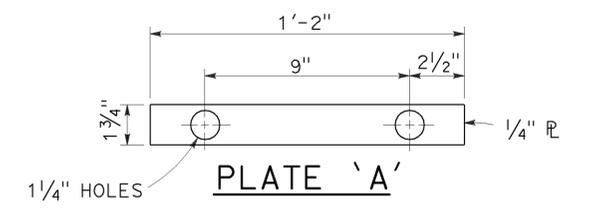
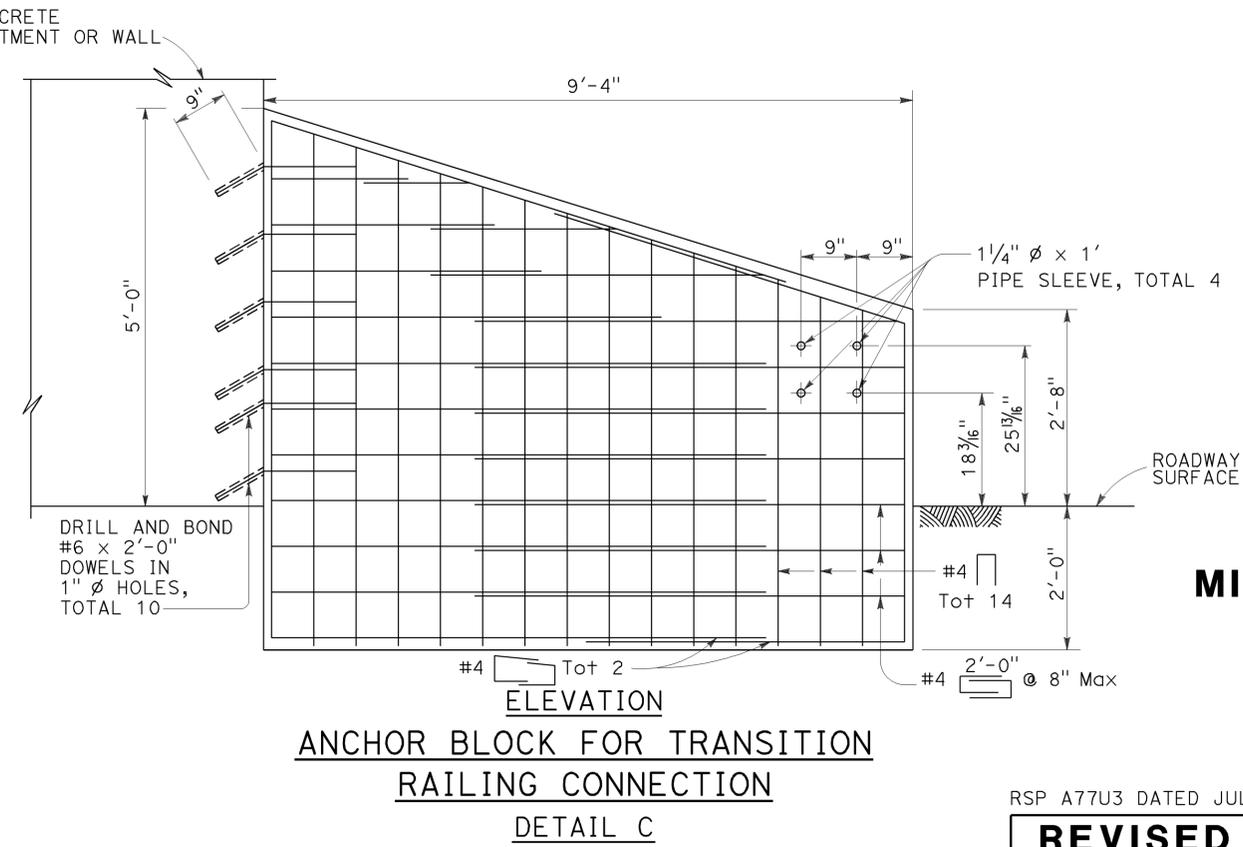
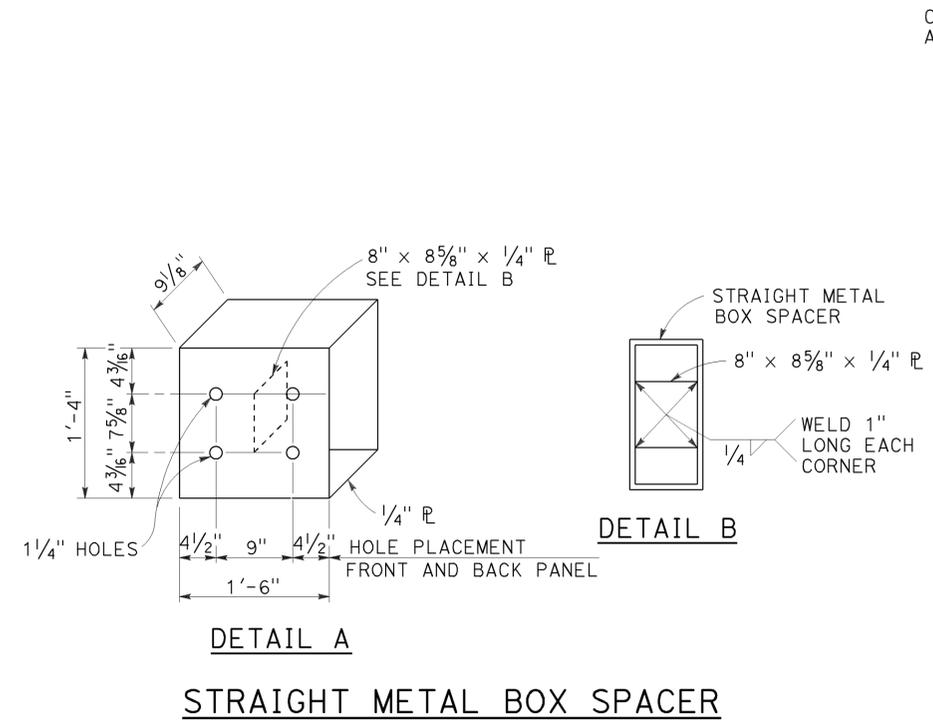
TO ACCOMPANY PLANS DATED 12-9-13



**NOTES:**

1. These connection details apply to abutments and walls.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1, RSP A77N1 and RSP A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4. Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gage nested thrie beam railing section which is connected to the concrete anchor block.
4. For typical use of Connection Details DD, see Layout Types 12A and 12B on Revised Standard Plan RSP A77Q1 and Layout Types 12C and 12D on Revised Standard Plan RSP A77Q2.
5. For typical use of Connection Detail EE, see Layout Type 12D on Revised Standard Plan RSP A77Q2 and Layout Type 12DD on Revised Standard Plan RSP A77Q5.

**MIDWEST GUARDRAIL SYSTEM CONNECTION TO ABUTMENT OR WALL**



**MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO ABUTMENTS AND WALLS**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

NO SCALE

RSP A77U3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77U3**

2010 REVISED STANDARD PLAN RSP A77U3

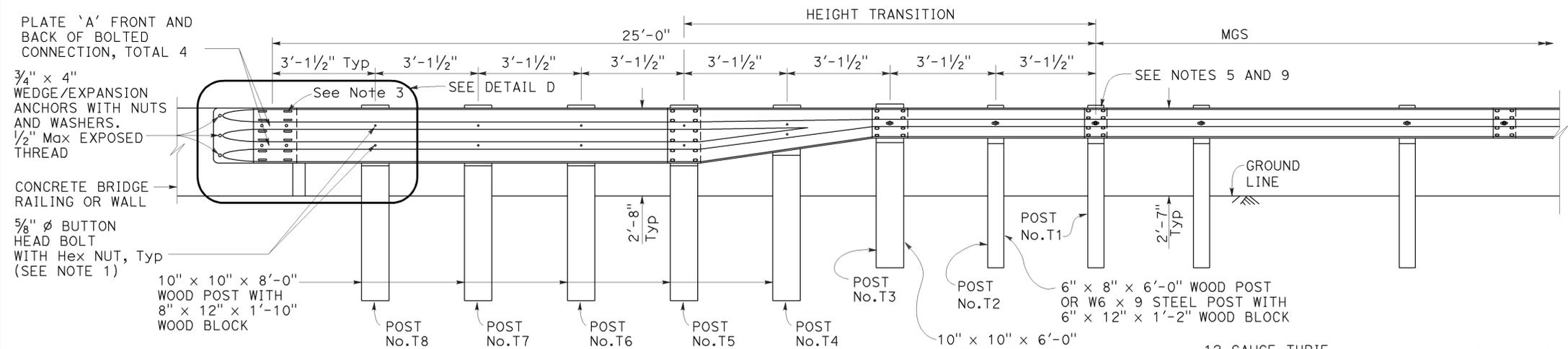
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	42	65

**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

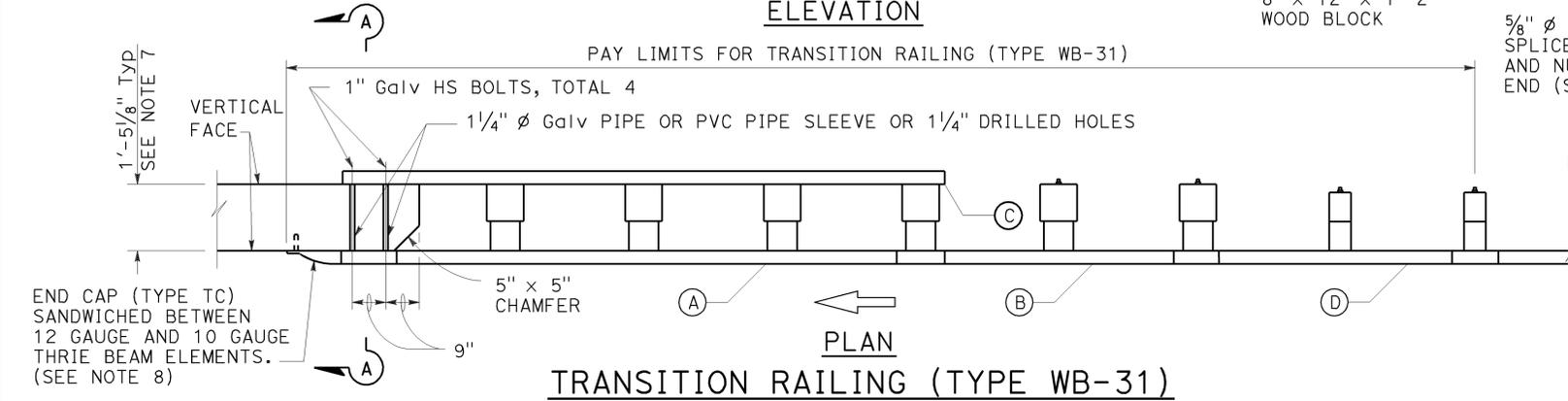
November 15, 2013  
PLANS APPROVAL DATE

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STATE OF CALIFORNIA

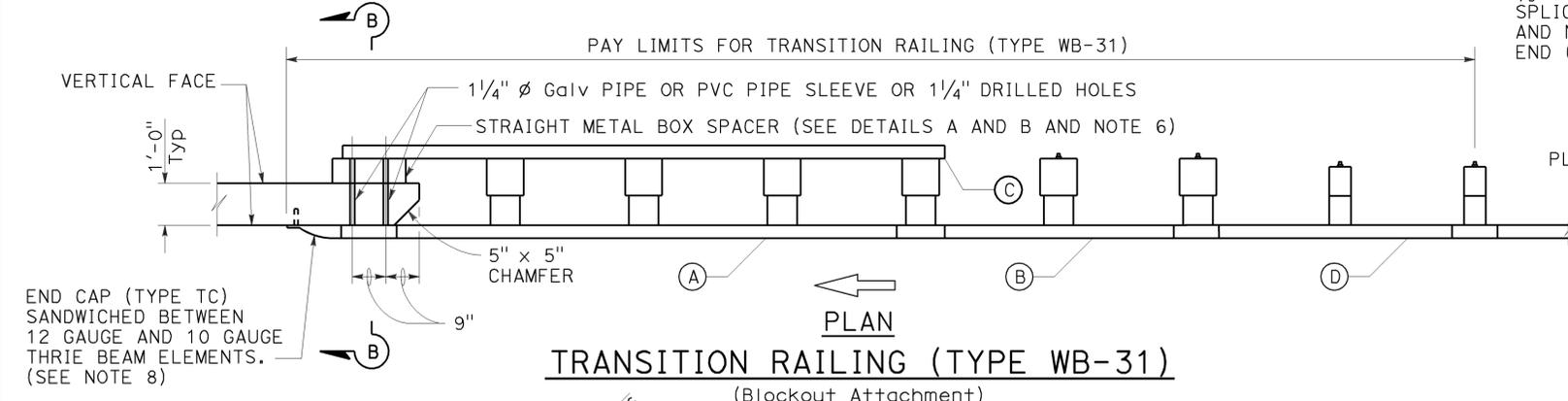


**ELEVATION**



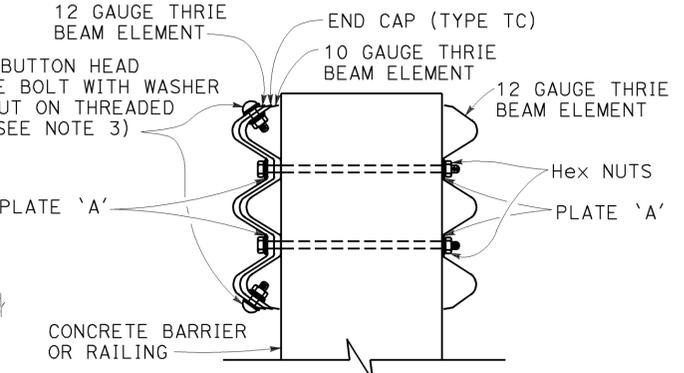
**TRANSITION RAILING (TYPE WB-31)**

(No Blockout Attachment)

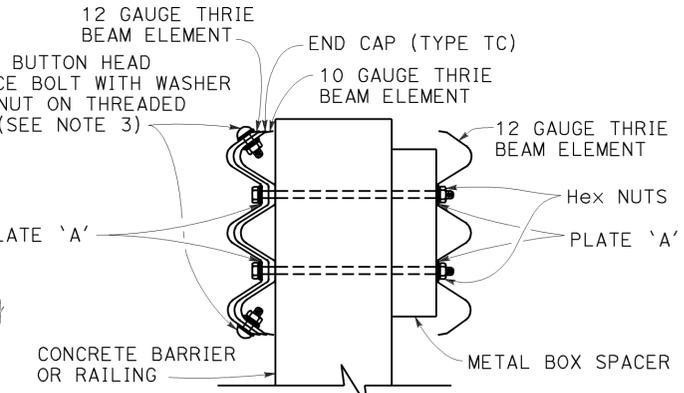


**TRANSITION RAILING (TYPE WB-31)**

(Blockout Attachment)



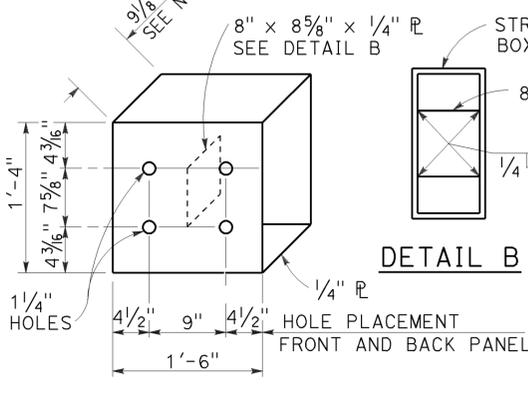
**SECTION A-A**



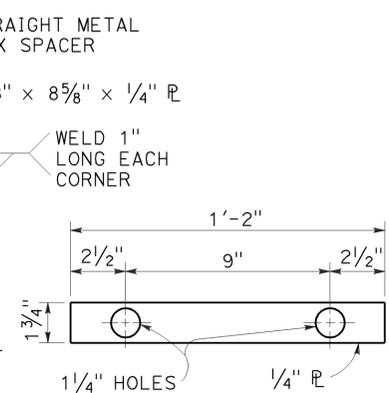
**SECTION B-B**

**LEGEND:**

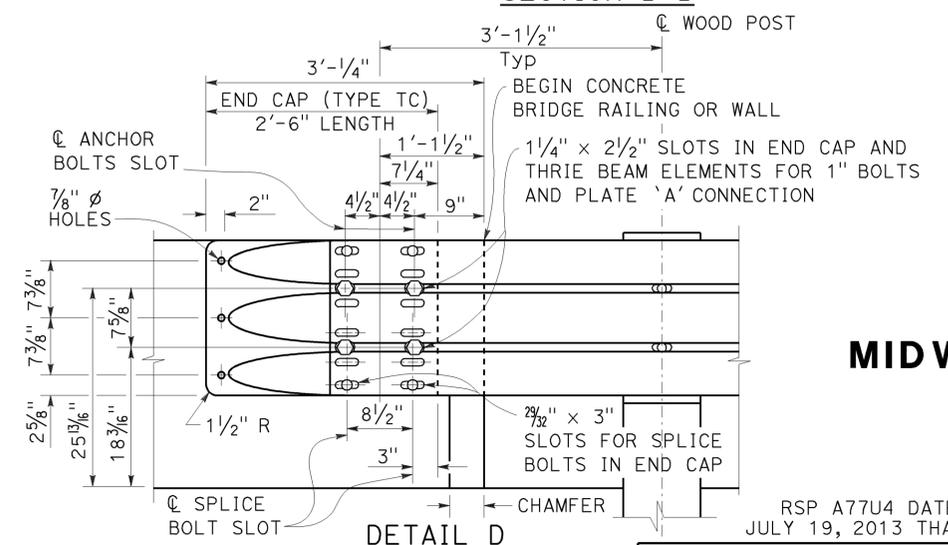
- (A) NESTED THRIE BEAM ELEMENTS (ONE 12 GAUGE ELEMENT NESTED OVER ONE 10 GAUGE ELEMENT).
- (B) ONE ASYMMETRICAL 10 GAUGE "W" BEAM TO THRIE BEAM ELEMENT.
- (C) ONE 12 GAUGE THRIE BEAM ELEMENT.
- (D) ONE 10 GAUGE "W" BEAM RAIL ELEMENT (7'-3 1/2" LENGTH)



**DETAIL A**  
**STRAIGHT METAL BOX SPACER**



**DETAIL B**  
**PLATE 'A'**



**DETAIL C**  
**DETAIL D**

**NOTES:** TO ACCOMPANY PLANS DATED 12-9-13

1. Use 5/8" Ø Button head bolts and hex nuts for connections to posts. No washer on rail face for bolted connections to post.
2. The nested rail elements, end cap, and 'W' beam to thrie beam element may be spliced together prior to bolting the elements to the wood post and concrete barrier or railing.
3. Exterior splice bolt holes for rail element splices at Post No. T5 and the connection to the concrete barrier or railing shall be the standard 2 3/32" x 1 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1 1/4" Ø. Only the top 4 and the bottom 4 splice bolts with washers and nuts are required for rail splices at Post No. T5 and the connection to the concrete barrier or railing.
4. The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
5. Typically, the railing connected to Transition Railing (Type WB-31) will be either standard railing section of MGS with height transition ratio of 150:1 or a Caltrans approved 31" end treatment attached to Post No. T1.
6. The depth of the metal box spacer varies from the 9/8" to 1 1/2" and is dependent on the width of the concrete railing or wall. The combined dimension for the depth of the metal box spacer plus the width of railing or wall is typically 21 1/8". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1 1/2", metal plates similar to Plate 'A' are to be used as spacers.
7. Where the width of the concrete railing or wall is greater than 17 1/8", wood blocks are to be used to fill the space created between the backside of Posts No. T5 through No. T8 and the rear thrie beam element. These wood blocks shall be 8" in width and 1'-2" in length. The dimension between the front thrie beam element and the rear thrie beam element is to match the width of the concrete railing or wall.
8. End cap may be installed over 12 gauge and 10 gauge thrie beam elements where transition railing is installed on the departure end of bridge railing.
9. Conform standard railing section height to 31" at Post No. T1 using height transition ratio of 150:1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
TRANSITION RAILING  
(TYPE WB-31)**

NO SCALE

RSP A77U4 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77U4 DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77U4**

2010 REVISED STANDARD PLAN RSP A77U4



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	44	65

Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

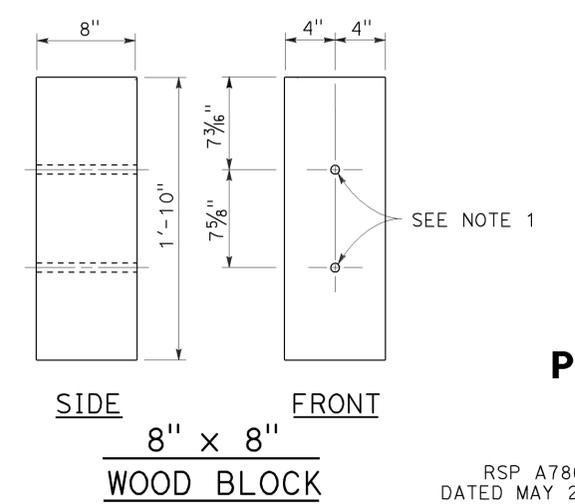
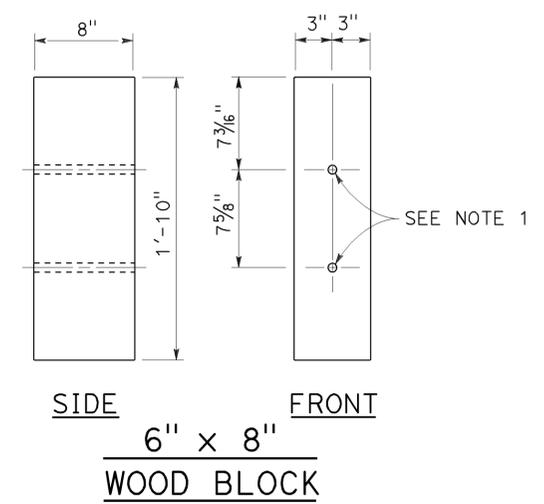
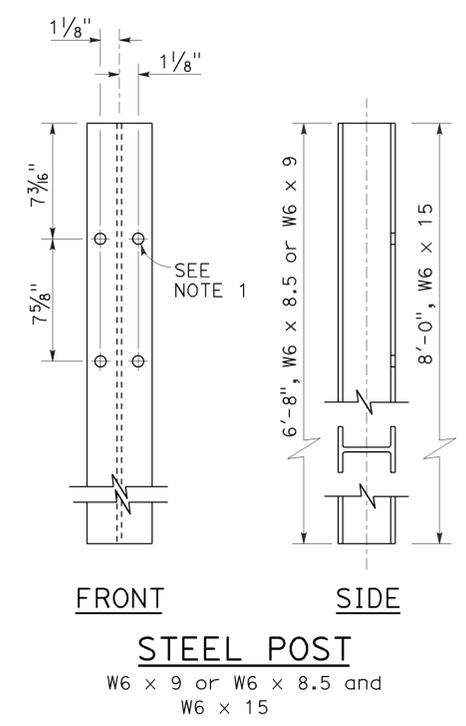
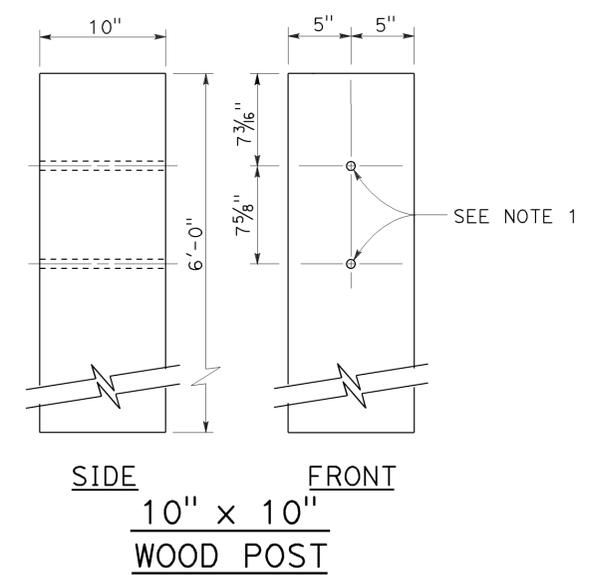
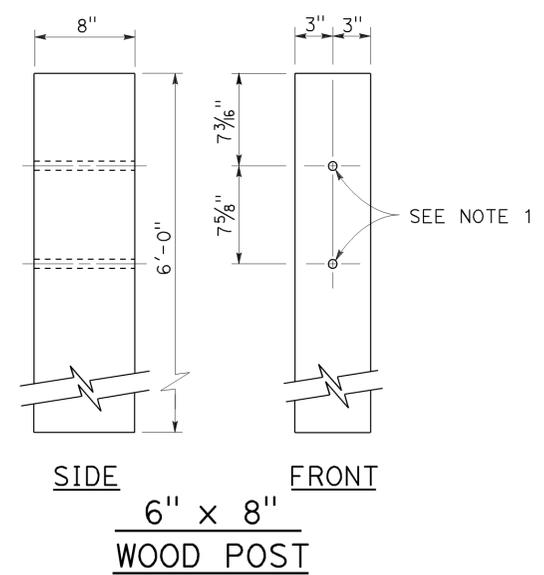
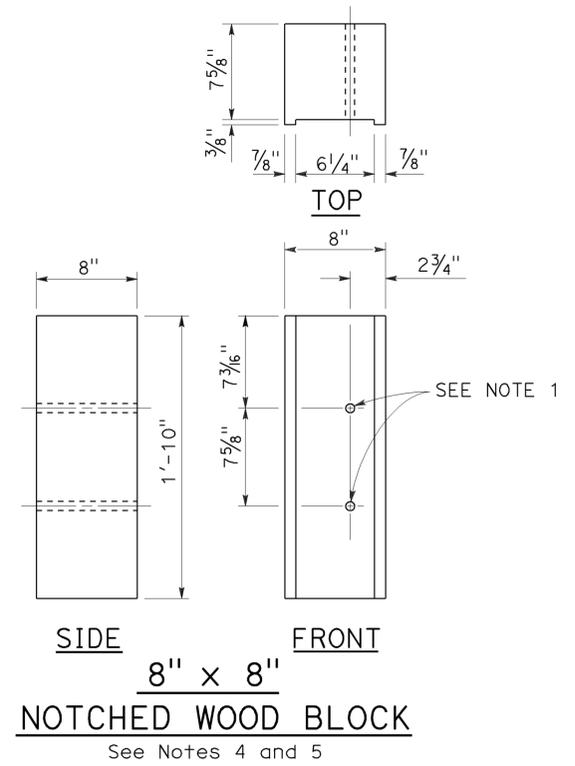
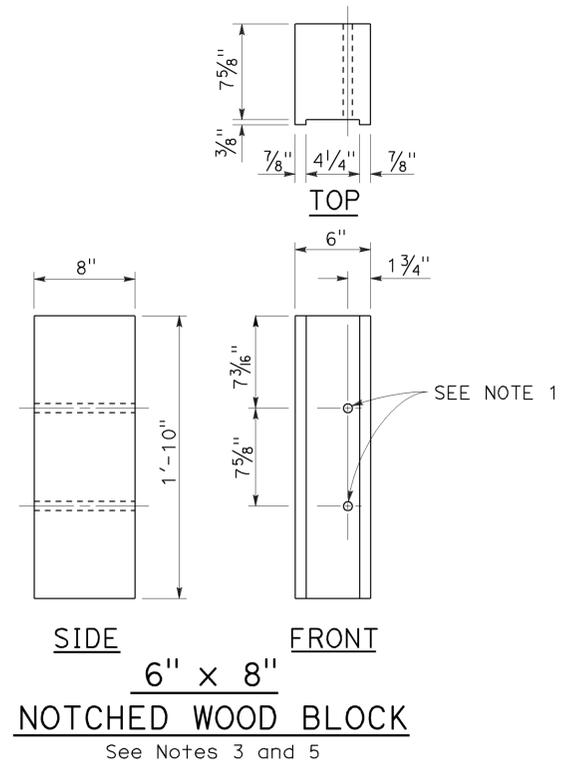
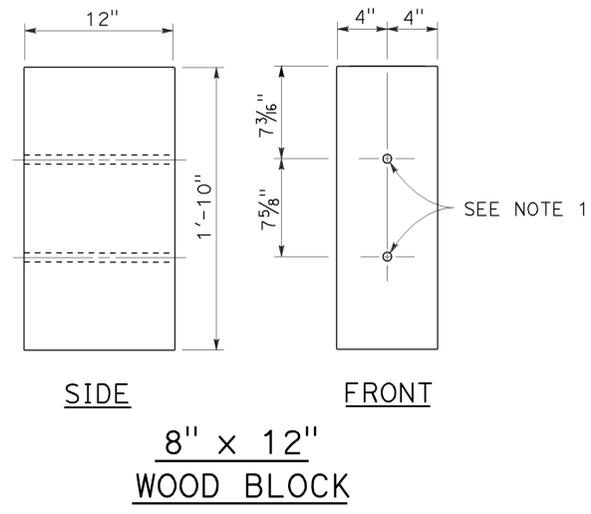
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REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 12-9-13

**NOTES:**

1. All holes in steel post to be  $\frac{13}{16}$ " Dia maximum. Holes in wood posts and wood blocks to be  $\frac{3}{4}$ " Dia  $\pm \frac{1}{16}$ ".
2. Dimensions shown for wood post are nominal.
3. For use with W6 x 8.5 or W6 x 9 steel post.
4. For use with W6 x 15 steel post.
5. Notched face of block faces steel post.



STATE OF CALIFORNIA  
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**THRIE BEAM BARRIER  
POST AND BLOCK DETAILS**

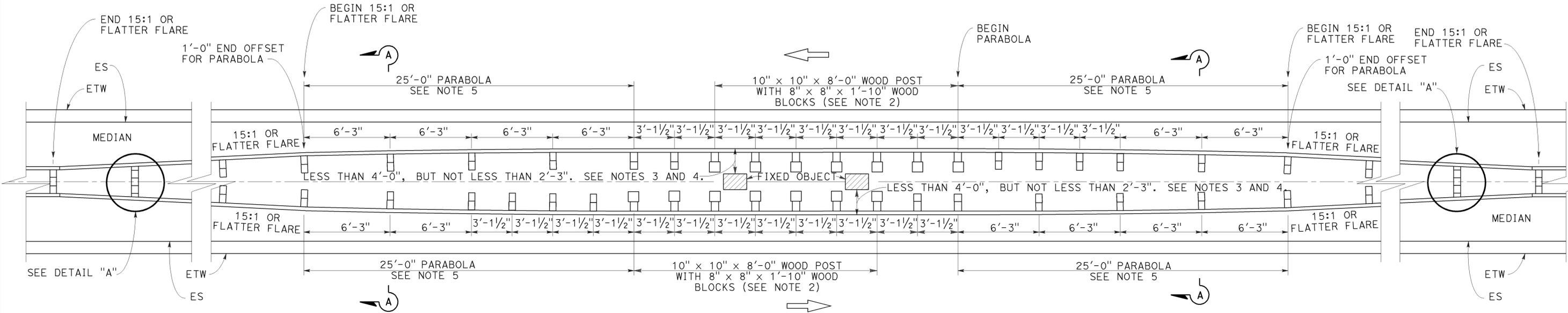
NO SCALE

RSP A78C2 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78C2  
DATED MAY 20, 2011 - PAGE 92 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A78C2**

2010 REVISED STANDARD PLAN RSP A78C2

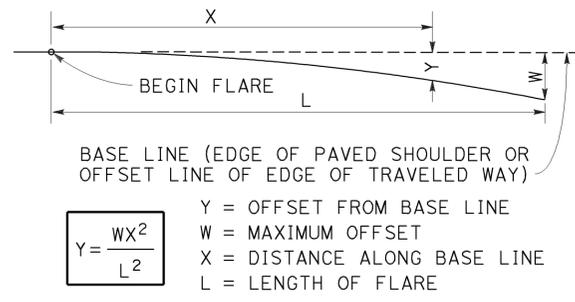
TO ACCOMPANY PLANS DATED 12-9-13



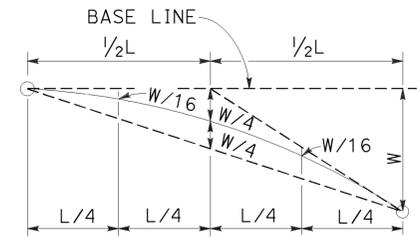
PLAN

**THRIE BEAM BARRIER AT FIXED OBJECTS**

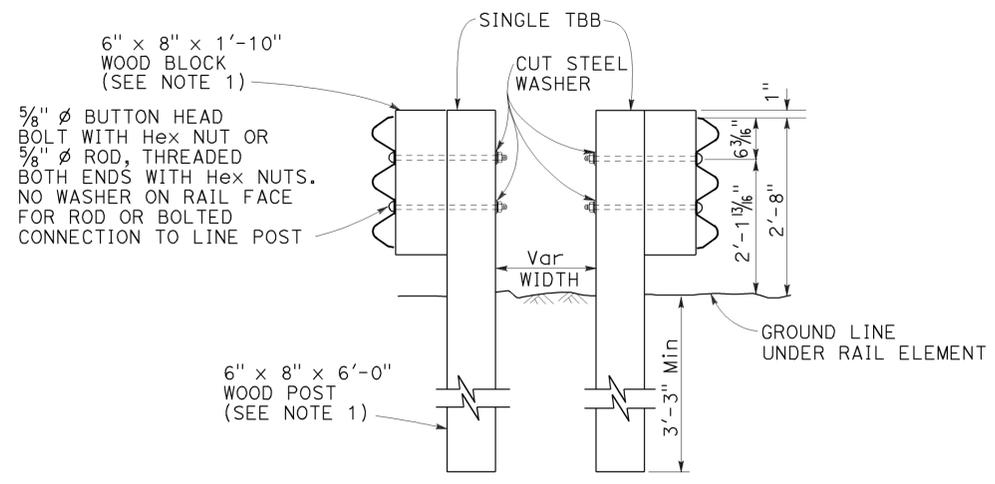
(Wood post and block shown)  
See Notes 1, 2 and 3.



**PARABOLIC FLARE OFFSETS**

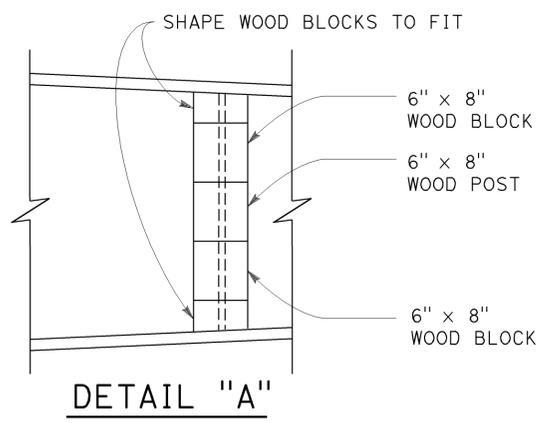


**TYPICAL PARABOLIC LAYOUT**



**SECTION A-A**

Wood post with wood block shown  
See Note 1



**DETAIL "A"**

- NOTES:**
- Where applicable and when specified, (W6 x 8.5 or W6 x 9) x 6'-8" steel post with 6" x 8" x 1'-10" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-10" wood block.
  - Where applicable and when specified, (W6 x 15) x 8'-0" steel post with 8" x 8" x 1'-10" notched wood blocks or notched recycled plastic blocks may be used for the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-10" wood blocks shown at 3'-1/2" center to center spacing.
  - Where a minimum clearance of 4'-0" or more can be obtained between the face of the thrie beam rail and the face of the fixed object(s), the following substitutions may be made:
    - 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-10" wood blocks for the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-10" wood blocks shown.
    - 6'-3" post spacing for the 3'-1/2" spacing shown.
  - Where the clearance between the face of the railing and the face of a fixed object is less than 2'-3", a concrete barrier should be constructed to shield the fixed object(s).
  - For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**THRIE BEAM BARRIER  
AT FIXED OBJECTS  
IN MEDIAN**

NO SCALE

RSP A78D1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78D1  
DATED MAY 20, 2011 - PAGE 97 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP A78D1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	46	65

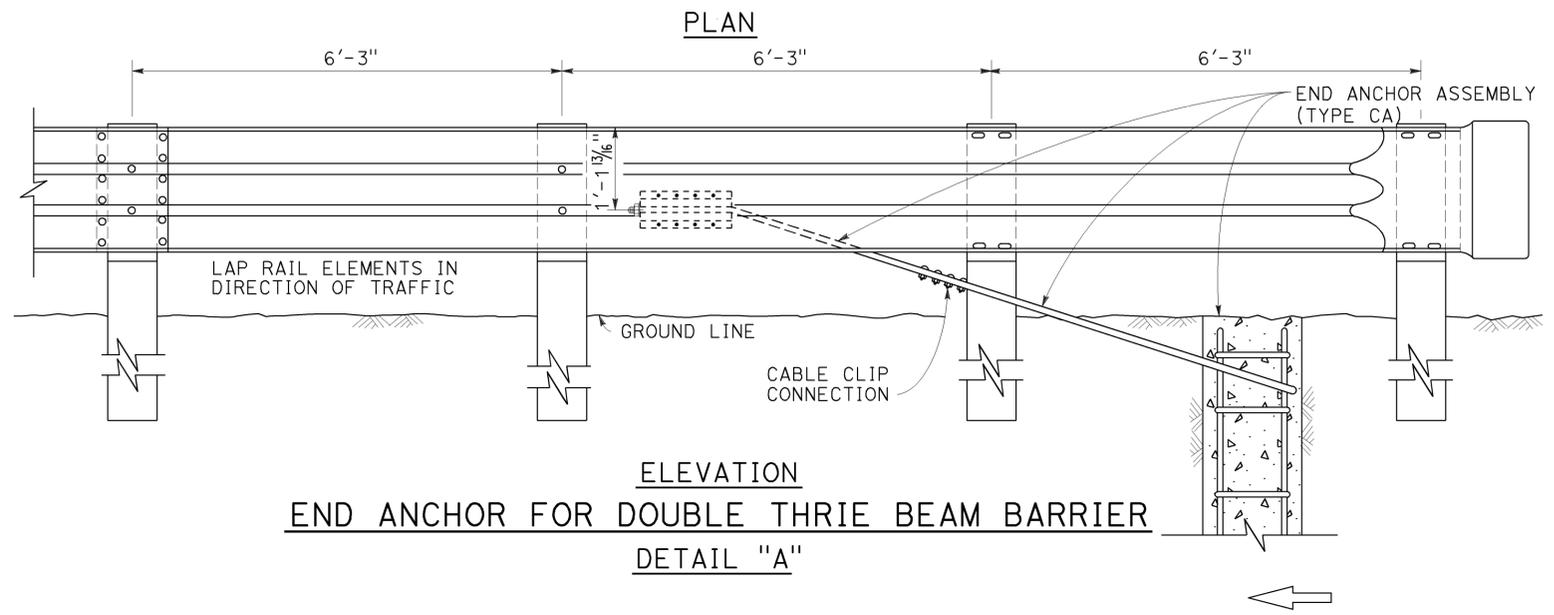
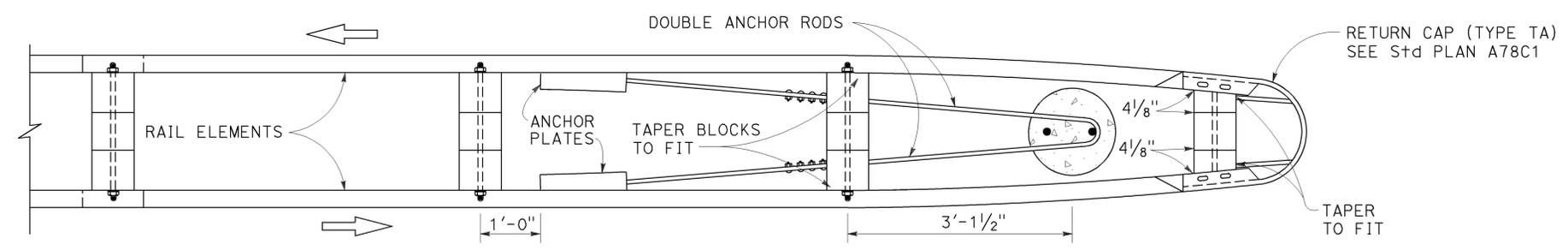
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

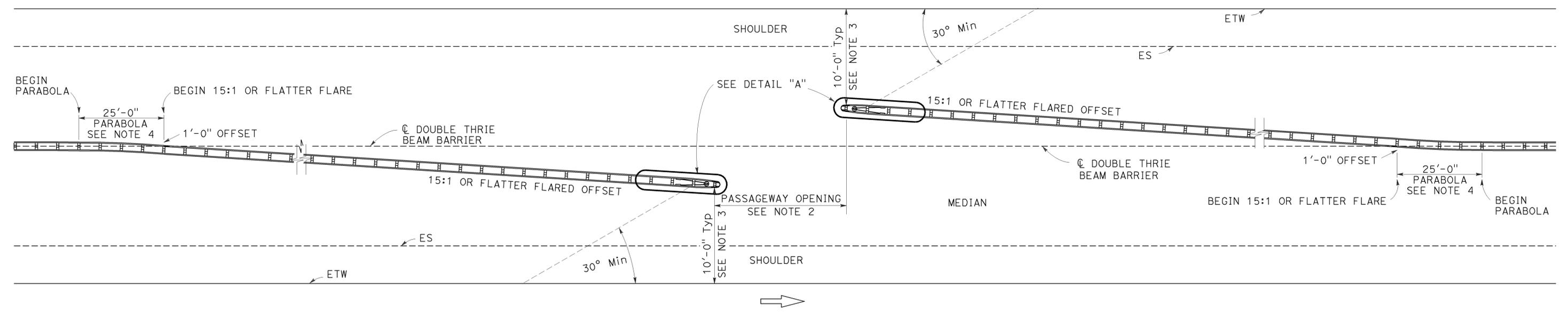
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 12-9-13



**NOTES:**

1. For End Anchor Assembly (Type CA) details, see Revised Standard Plan RSP A77T1.
2. The typical passageway opening for motorcycles is 6'-0" to 8'-0". Generally, motorcycle passageways are not used where median width is less than 22'-0". The typical passageway opening for motor vehicles is 12'-0" to 16'-0". Generally, motor vehicle passageways are not used where median width is 32'-0" or less. See Project Plans for width of passageway opening.
3. Barrier end offsets from edge of traveled way vary depending on type of highway facility involved. End offsets other than 10'-0" will be shown on the Project Plans.
4. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.



EMERGENCY PASSAGeway  
IN THRIE BEAM BARRIER

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**DOUBLE THRIE BEAM BARRIER  
EMERGENCY PASSAGeway  
AND END ANCHOR  
ASSEMBLY DETAILS**

NO SCALE

RSP A78E2 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78E2  
DATED MAY 20, 2011 - PAGE 100 OF THE STANDARD PLANS BOOK DATED 2010.

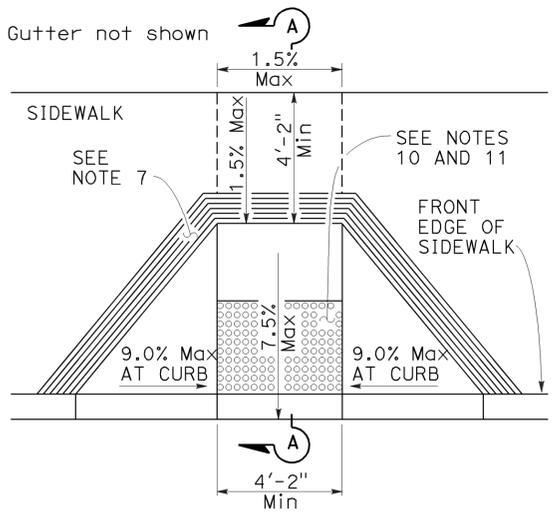
**REVISED STANDARD PLAN RSP A78E2**

2010 REVISED STANDARD PLAN RSP A78E2

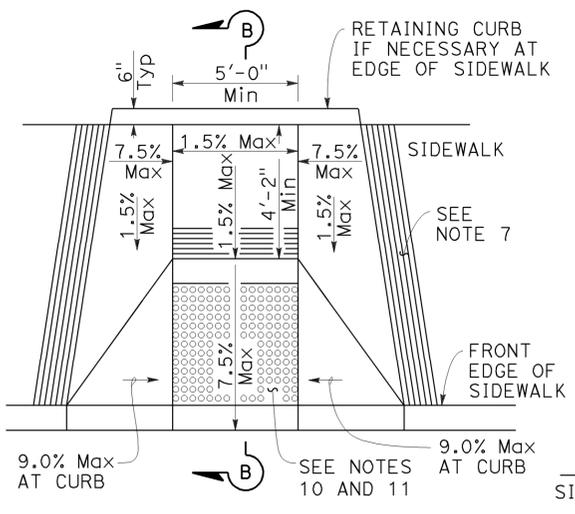
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	47	65

H. David Cordova  
 REGISTERED CIVIL ENGINEER  
 July 19, 2013  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

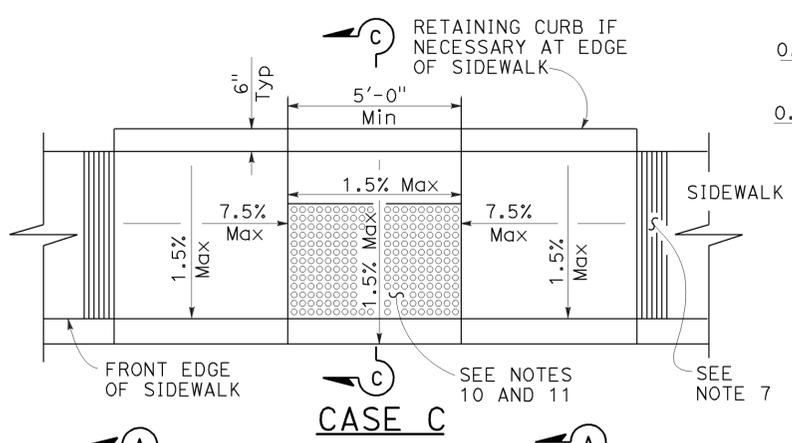
REGISTERED PROFESSIONAL ENGINEER  
 Hector David Cordova  
 No. C41957  
 Exp. 3-31-14  
 CIVIL  
 STATE OF CALIFORNIA



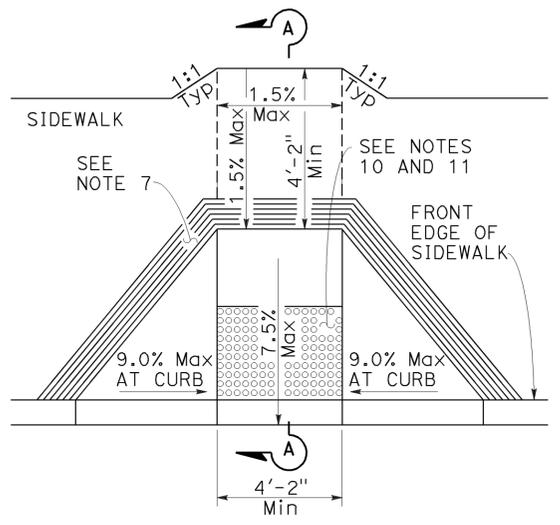
**CASE A**



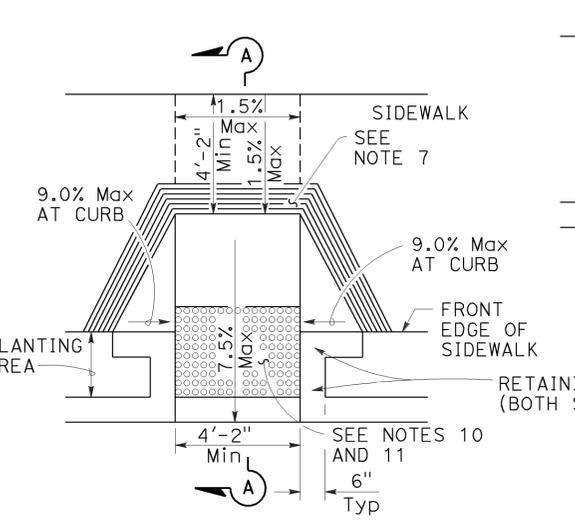
**CASE B**



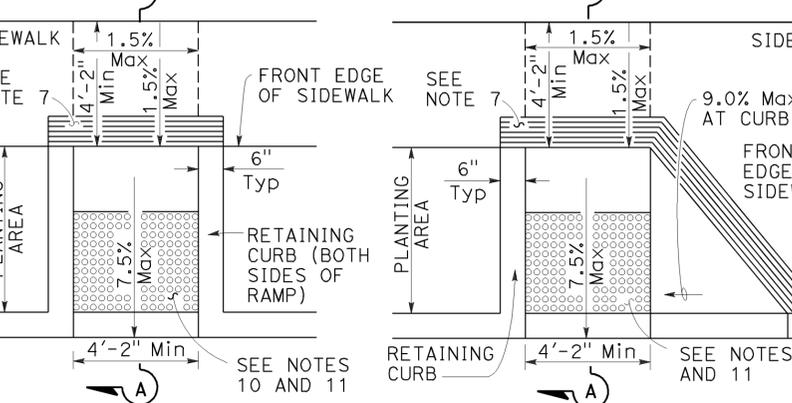
**CASE C**



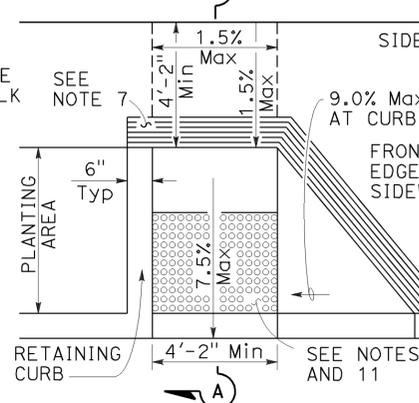
**CASE D**



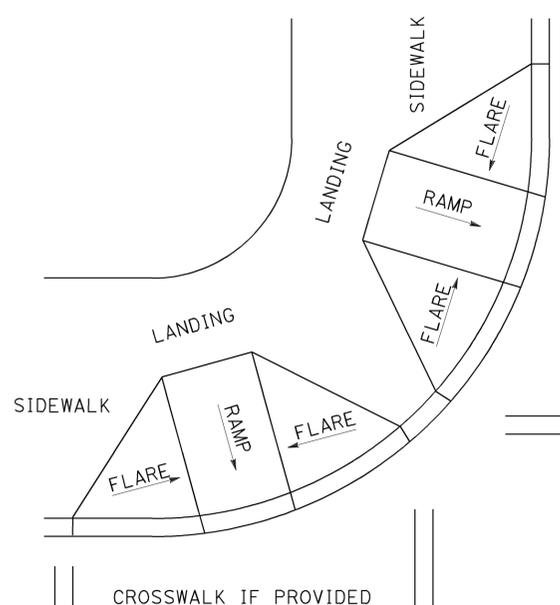
**CASE E**



**CASE F**



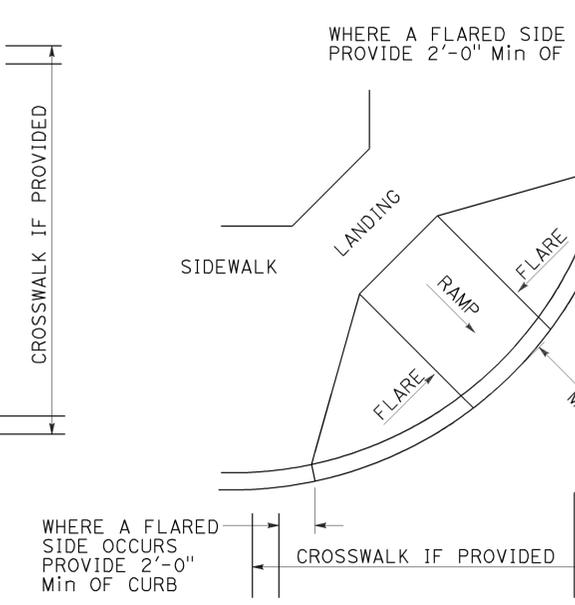
**CASE G**



**DETAIL A**

**TYPICAL TWO-RAMP CORNER INSTALLATION**

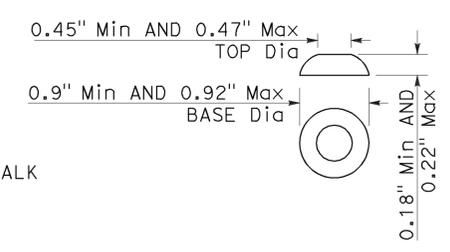
See Note 1



**DETAIL B**

**TYPICAL ONE-RAMP CORNER INSTALLATION**

See Notes 1 and 3

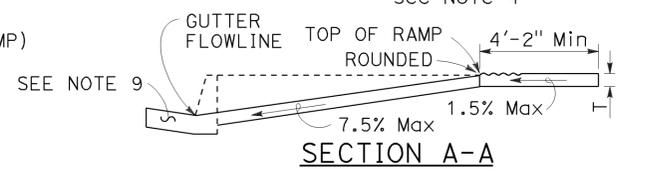


**RAISED TRUNCATED DOME**

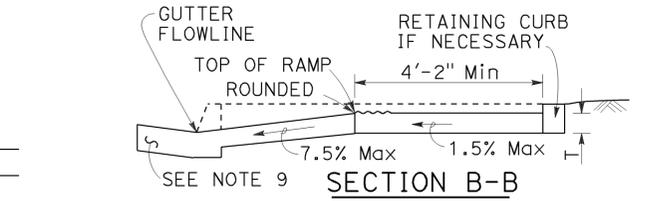
TO ACCOMPANY PLANS DATED 12-9-13

**NOTES:**

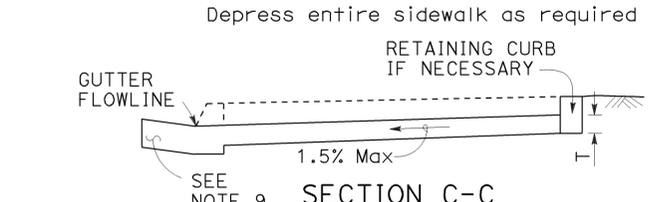
- As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
- If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-2" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
- When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
- As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
- If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-2".
- Side slope of ramp flares vary uniformly from a maximum of 9.0% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
- The curb ramp shall be outlined, as shown, with a 1'-0" wide border with 1/4" grooves approximately 3/4" on center. See grooving detail.
- Transitions from ramps and landing to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
- Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches of the curb ramp shall not be steeper than 1:20 (5.0%). Gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.
- Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable Warning Surfaces shall conform to the details on this plan and the requirements in the Standard Specifications.
- The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
- Sidewalk and ramp thickness, "T", shall be 3/2" minimum.
- Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
- Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.



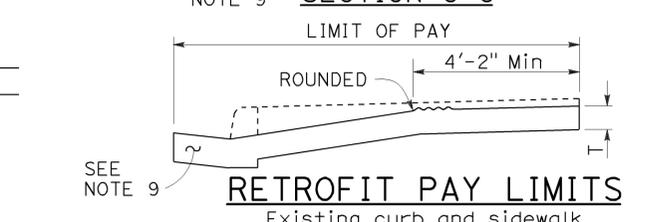
**SECTION A-A**



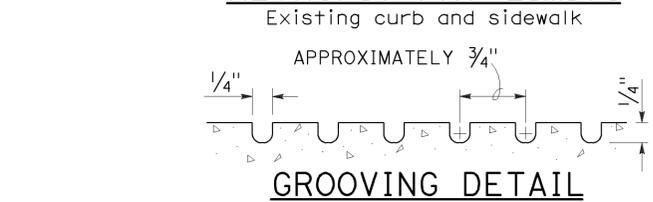
**SECTION B-B**



**SECTION C-C**



**RETROFIT PAY LIMITS**



**GROOVING DETAIL**



**RAISED TRUNCATED DOME PATTERN (IN-LINE) DETECTABLE WARNING SURFACE**

See Note 10

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**CURB RAMP DETAILS**  
NO SCALE

RSP A88A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A88A DATED MAY 20, 2011 - PAGE 121 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A88A**

2010 REVISED STANDARD PLAN RSP A88A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	48	65

*H. David Cordova*  
 REGISTERED CIVIL ENGINEER  
 No. C41957  
 Exp. 3-31-14  
 CIVIL  
 STATE OF CALIFORNIA

July 19, 2013  
 PLANS APPROVAL DATE

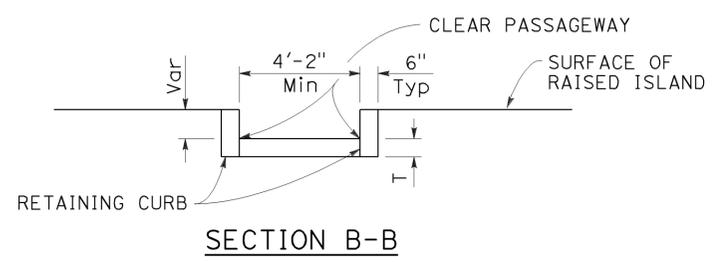
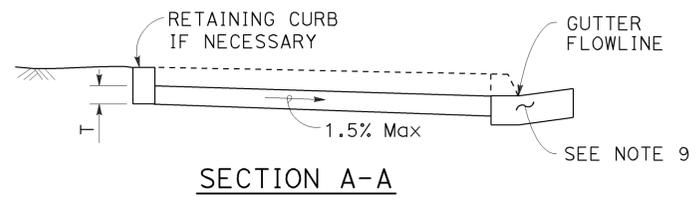
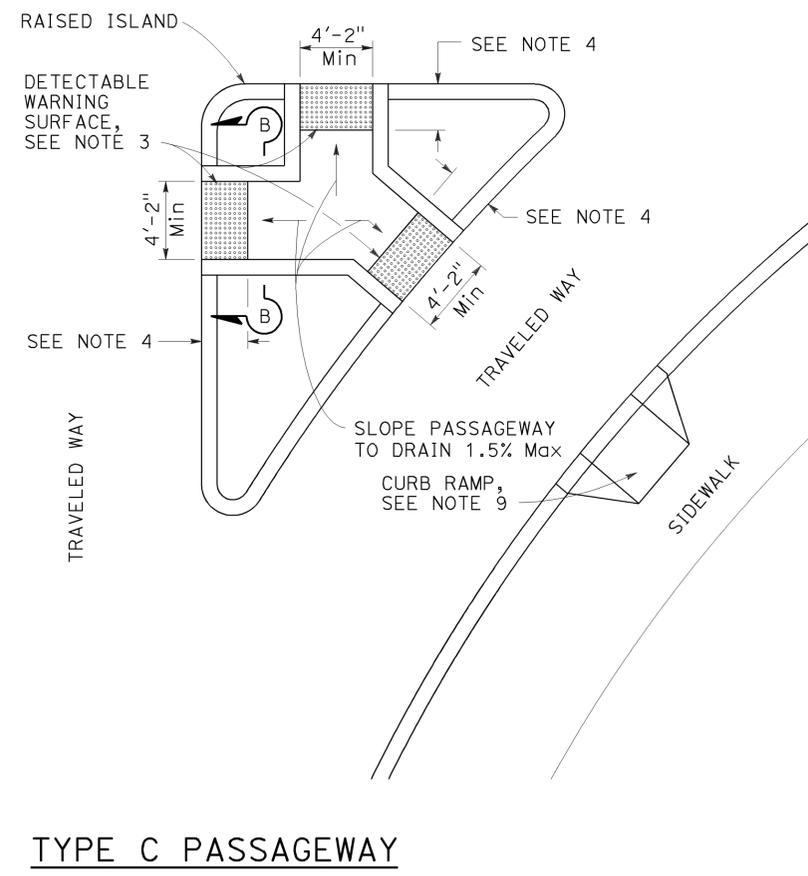
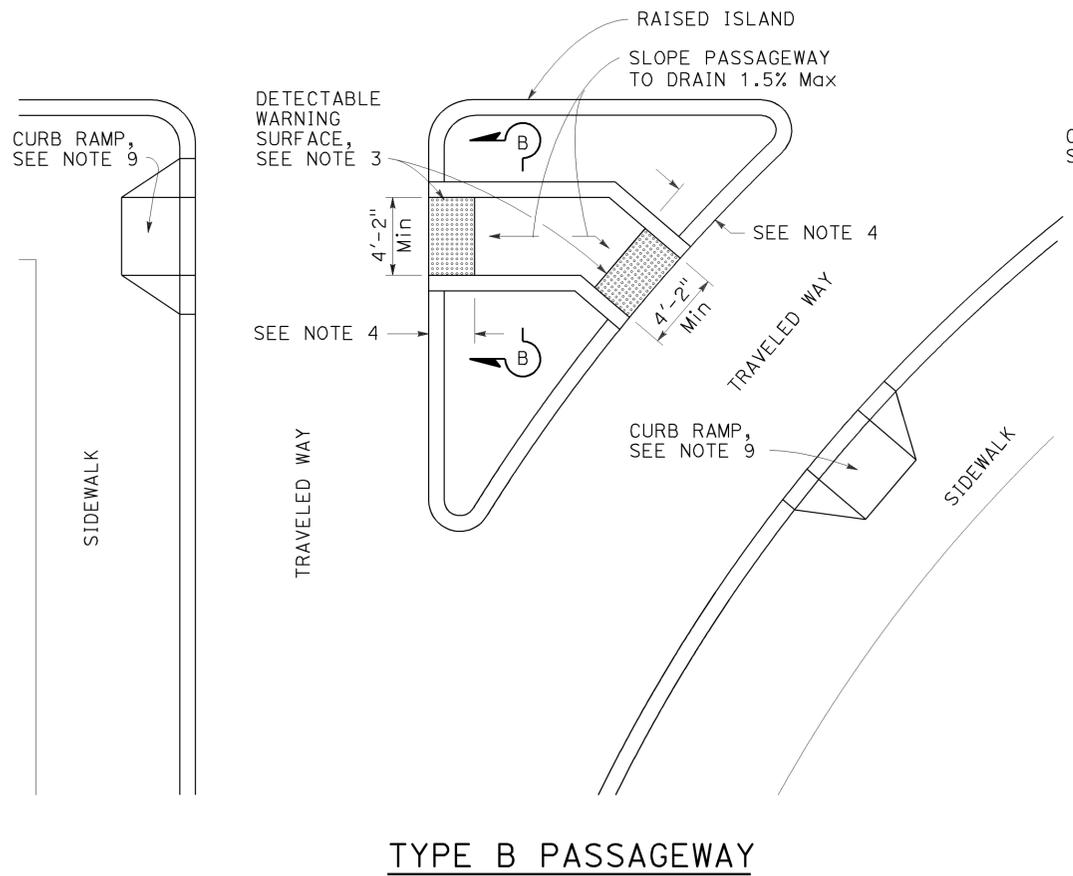
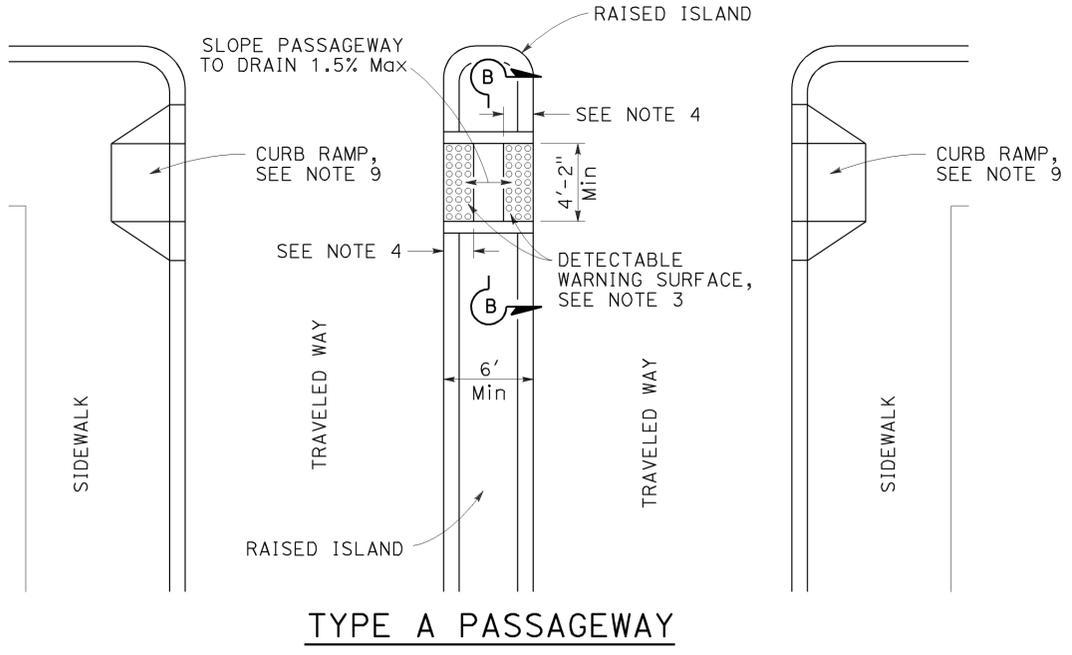
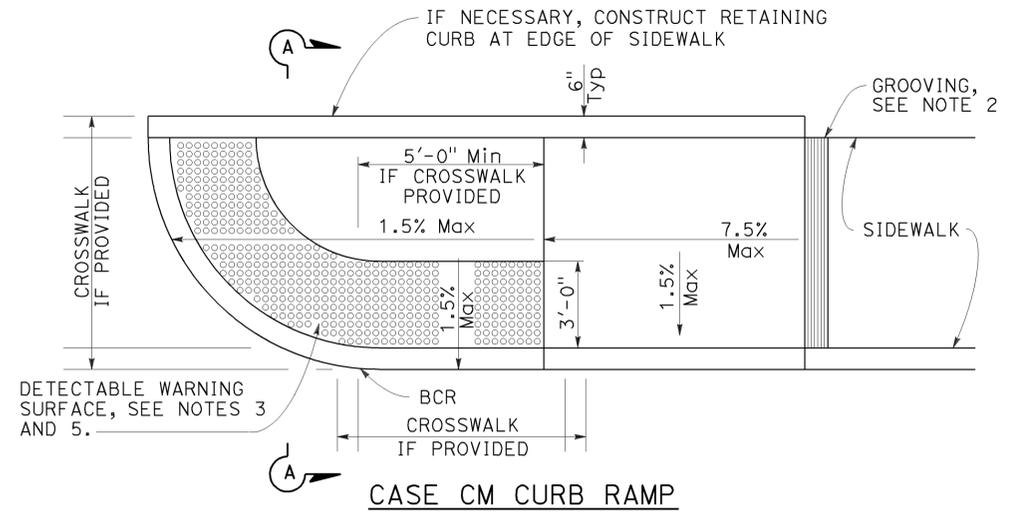
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TO ACCOMPANY PLANS DATED 12-9-13

**NOTES:**

1. Sidewalk, ramp and passageway thickness, "T", shall be 3 1/2" minimum.
2. For details of grooving used with Case CM curb ramp, see Revised Standard Plan RSP A88A.
3. For details of detectable warning surfaces, see Revised Standard Plan RSP A88A.
4. Where an island passageway length is greater than or equal to 6'-0", but less than 8'-0", each detectable warning surface shall extend the full width and 2'-0" depth of the passageway length. Where an island passageway length is greater than or equal to 8'-0", each detectable warning surface shall extend the full width and 3'-0" depth of the passageway length.
5. For Case CM curb ramp, the edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
6. Transitions from ramps to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
7. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
8. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.
9. For additional curb ramp details, see Revised Standard Plan RSP A88A.

Gutter not shown



STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

**CURB RAMP AND ISLAND PASSAGEWAY DETAILS**

NO SCALE

RSP A88B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A88B DATED MAY 20, 2011 - PAGE 122 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A88B**

2010 REVISED STANDARD PLAN RSP A88B

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	49	65

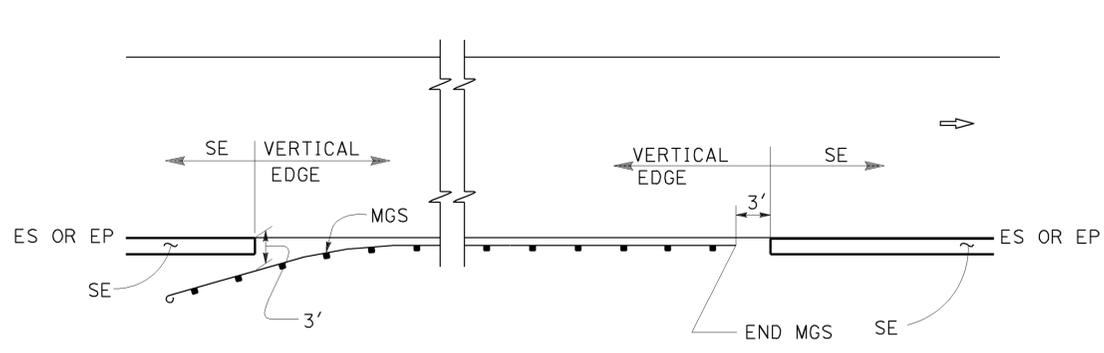
REGISTERED CIVIL ENGINEER  
 November 15, 2013  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER  
 Cornelis M. Hakim  
 No. C55610  
 Exp. 12-31-14  
 CIVIL  
 STATE OF CALIFORNIA

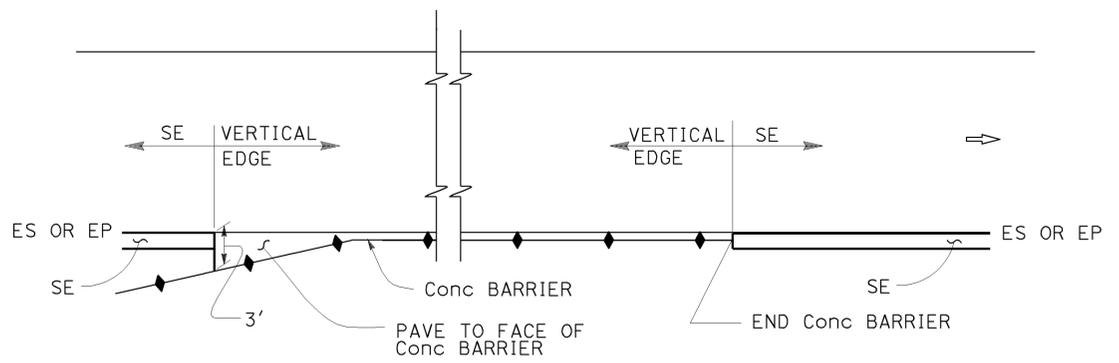
TO ACCOMPANY PLANS DATED 12-9-13

**ABBREVIATIONS:**

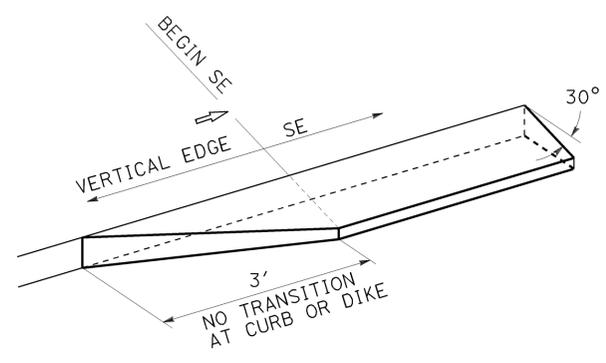
SE SAFETY EDGE



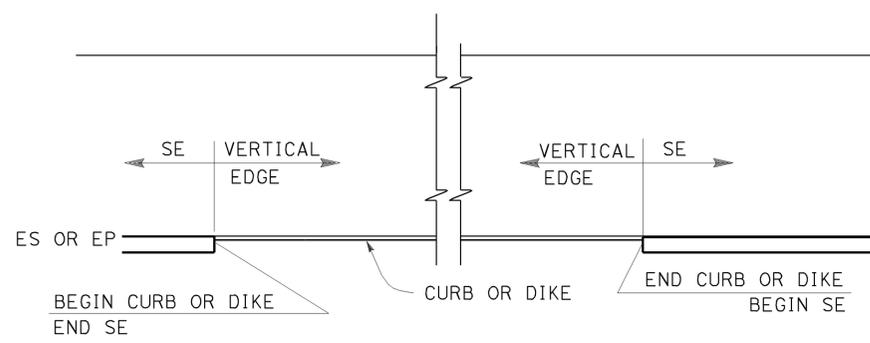
**MGS**



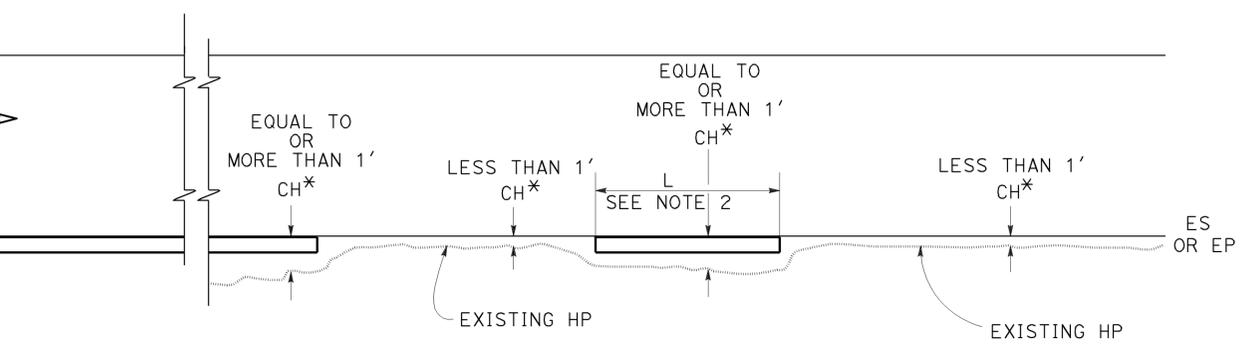
**CONCRETE BARRIER**



**TRANSITION DETAIL FOR CONCRETE ONLY**

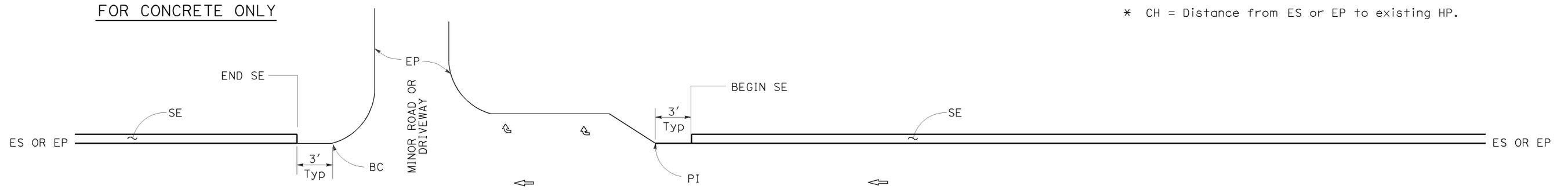


**CURB OR DIKE**



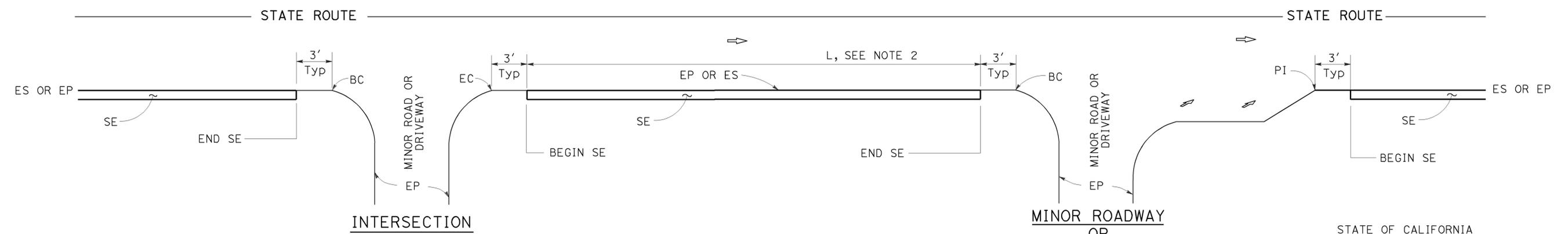
**NARROW SIDE SLOPE**

\* CH = Distance from ES or EP to existing HP.



**STATE ROUTE**

**STATE ROUTE**



**INTERSECTION**

**DRIVEWAY AND INTERSECTION**

**MINOR ROADWAY OR DRIVEWAY**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**PAVEMENT EDGE TREATMENTS**

NO SCALE

**NOTES:**

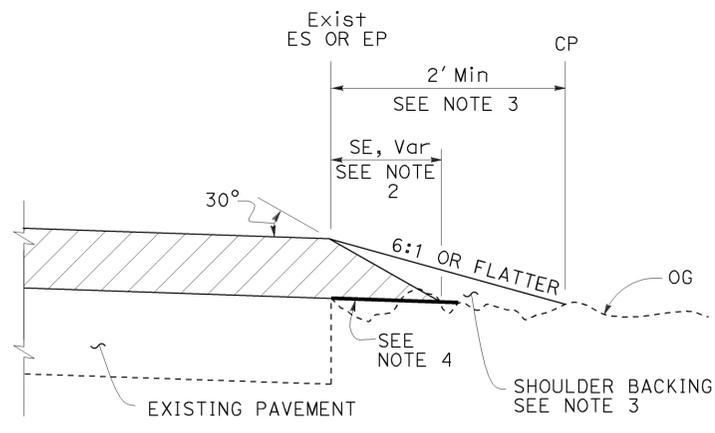
1. For details not shown, see Revised Standard Plans RSP P75 and RSP P76.
2. Safety edge is optional when L is less than 30'.

RSP P74 DATED NOVEMBER 15, 2013 SUPERSEDES RSP P74 DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

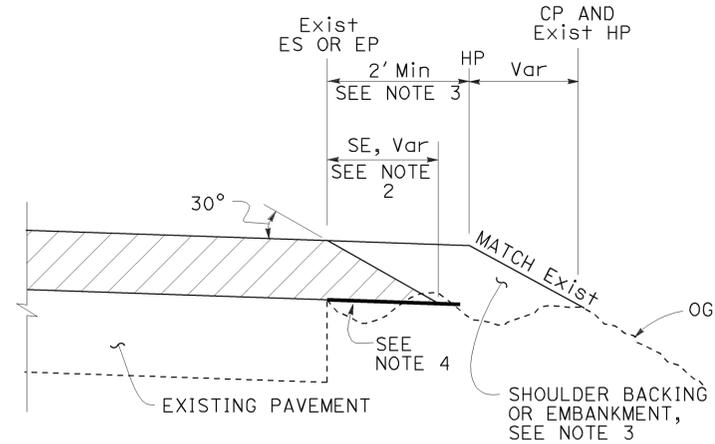
**REVISED STANDARD PLAN RSP P74**

2010 REVISED STANDARD PLAN RSP P74

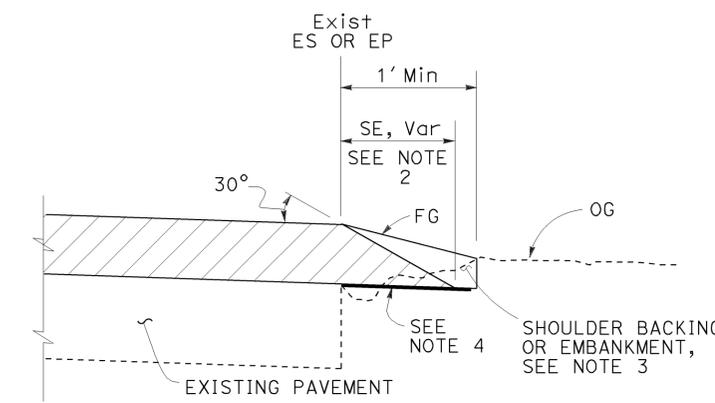
2010 REVISED STANDARD PLAN RSP P75



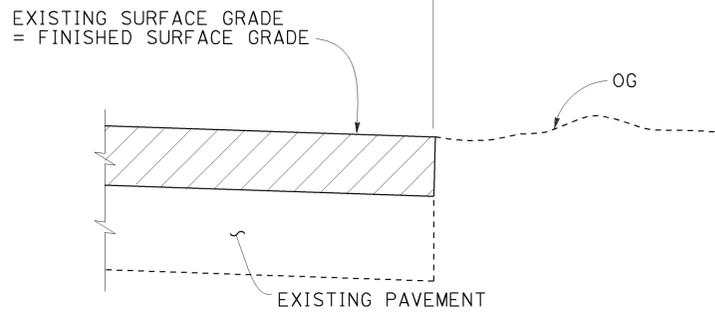
**CASE A**  
Safety Edge



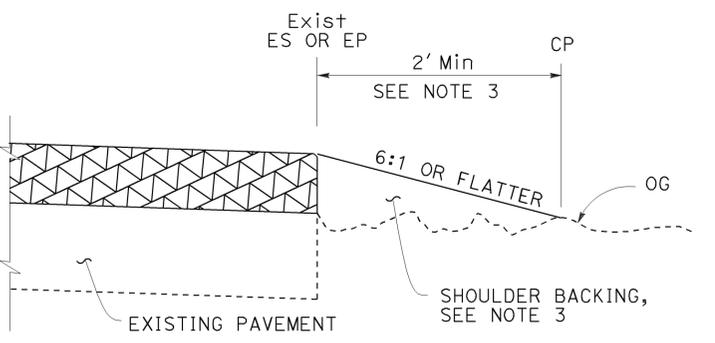
**CASE B**  
Safety Edge



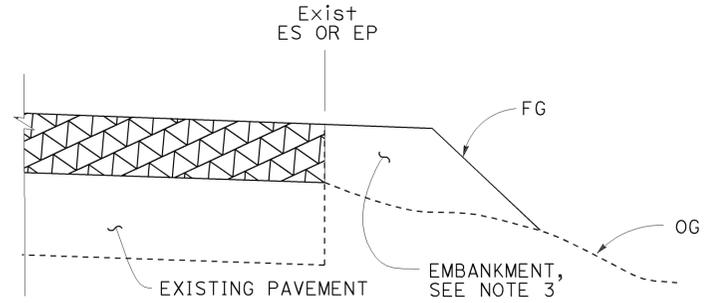
**CASE C**  
Safety Edge



**CASE D**  
Vertical Edge



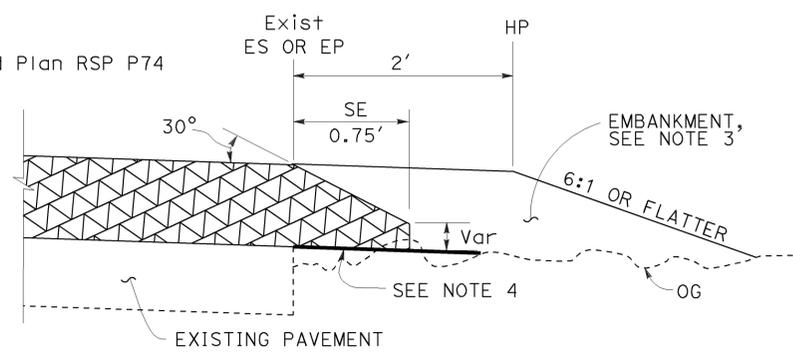
**CASE E**  
Vertical Edge



**CASE F**  
Vertical Edge

\* See Table A and Revised Std Plan RSP P74

- NOTES:**
- For limits of safety edge and vertical edge treatments, see Revised Standard Plan RSP P74.
  - Details shown for HMA overlay thickness less than 0.43'. See Detail "A" for HMA overlay thickness more than 0.43' or concrete overlay.
  - For locations and limits of shoulder backing or embankment see project plans.
  - Grade existing ground to place safety edge. 1' minimum width
  - Safety edge transverse joint must match overlay transverse joint. End of #6 longitudinal bar must be 2" ± 1/2" clear from transverse joint.
  - Safety edge is not needed in the area of MGS, barrier, right turn lane and acceleration lane. See Revised Standard Plan RSP P74.



**DETAIL "A"**

For HMA overlay thickness more than 0.43' or concrete overlay

**LEGEND:**

- HMA OVERLAY
- HMA OR CONCRETE OVERLAY
- CONCRETE OVERLAY

**ABBREVIATIONS:**

- SE SAFETY EDGE
- TT TOTAL THICKNESS OF SE

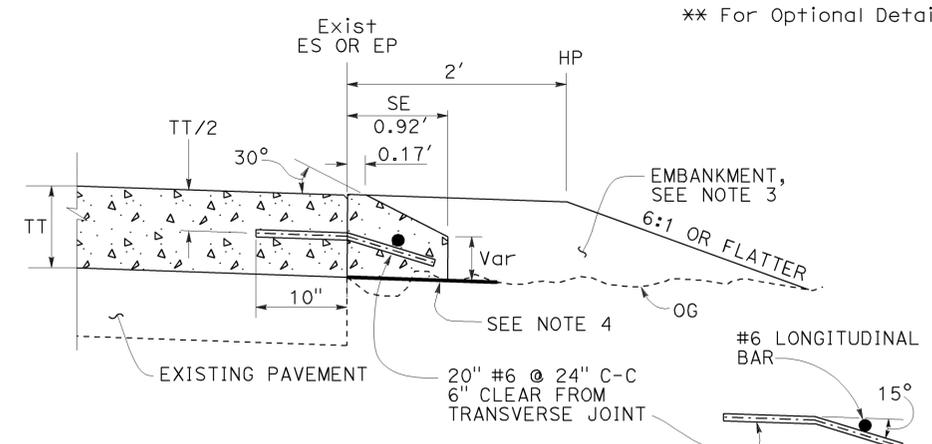
**TABLE A**  
EDGE TREATMENT FOR VARIOUS OVERLAY THICKNESS AND CONDITIONS

FIELD CONDITION	OVERLAY THICKNESS	
	LESS THAN 0.15'	0.15' OR MORE
Exist SLOPE 6:1 OR FLATTER	CASE E	CASE A
Exist SLOPE 3:1 TO 6:1	CASE E	CASE B
Exist SLOPE STEEPER THAN 3:1	CASE F	CASE F
CUT SECTION (REPLACE, COLD PLANE, MILL PAVEMENT)	CASE D	CASE C

**ADDITIONAL HMA OR CONCRETE QUANTITIES FOR SE/SIDE/MILE**

TYPICAL CROSS SECTION	TT	TOTAL ADDITIONAL MATERIAL FOR SE/SIDE/MILE		
		HMA (TON)	CONCRETE (CY)*	CONCRETE (CY)**
	0.15'	NA	NA	NA
	0.20'	13.7	NA	NA
	0.30'	30.9	NA	NA
	0.40'	54.9	NA	NA
	0.45'	69.4	NA	NA
	0.50'	84.2	NA	NA
	0.60'	113.9	NA	NA
	0.70'	143.6	70.9	94.2
	0.80'	173.3	85.6	112.2
	0.90'	203.0	100.3	130.2
	1.00'	232.7	114.9	148.2
	1.10'	262.4	129.6	166.2
1.20'	292.1	144.3	184.2	

\* For Detail "A"  
\*\* For Optional Detail "A"

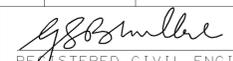


**OPTIONAL DETAIL "A"**  
For concrete overlay See Note 5

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT EDGE TREATMENTS- OVERLAYS**  
NO SCALE

RSP P75 DATED NOVEMBER 15, 2013 SUPERSEDES RSP P75 DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	51	65

  
 REGISTERED CIVIL ENGINEER  
 July 19, 2013  
 PLANS APPROVAL DATE



THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 12-9-13

TABLE 1

TAPER LENGTH CRITERIA AND CHANNELIZING DEVICE SPACING							
SPEED (S)	MINIMUM TAPER LENGTH * FOR WIDTH OF OFFSET 12 FEET (W)				MAXIMUM CHANNELIZING DEVICE SPACING		
	TANGENT 2L	MERGING L	SHIFTING L/2	SHOULDER L/3	X	Y	Z **
					TAPER	TANGENT	CONFLICT
mph	ft	ft	ft	ft	ft	ft	ft
20	160	80	40	27	20	40	10
25	250	125	63	42	25	50	12
30	360	180	90	60	30	60	15
35	490	245	123	82	35	70	17
40	640	320	160	107	40	80	20
45	1080	540	270	180	45	90	22
50	1200	600	300	200	50	100	25
55	1320	660	330	220	55	110	27
60	1440	720	360	240	60	120	30
65	1560	780	390	260	65	130	32
70	1680	840	420	280	70	140	35

\* - For other offsets, use the following merging taper length formula for L:  
 For speed of 40 mph or less,  $L = WS^2/60$   
 For speed of 45 mph or more,  $L = WS$

Where: L = Taper length in feet  
 W = Width of offset in feet  
 S = Posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

\*\* - Use for taper and tangent sections where there are no pavement markings or where there is a conflict between existing pavement markings and channelizers (CA).

TABLE 2

LONGITUDINAL BUFFER SPACE AND FLAGGER STATION SPACING				
SPEED *	Min D **	DOWNGRADE Min D ***		
		-3%	-6%	-9%
		ft	ft	ft
20	115	116	120	126
25	155	158	165	173
30	200	205	215	227
35	250	257	271	287
40	305	315	333	354
45	360	378	400	427
50	425	446	474	507
55	495	520	553	593
60	570	598	638	686
65	645	682	728	785
70	730	771	825	891

\* - Speed is posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph  
 \*\* - Longitudinal buffer space or flagger station spacing  
 \*\*\* - Use on sustained downgrade steeper than -3 percent and longer than 1 mile.

TABLE 3

ADVANCE WARNING SIGN SPACING			
ROAD TYPE	DISTANCE BETWEEN SIGNS *		
	A	B	C
	ft	ft	ft
URBAN - 25 mph OR LESS	100	100	100
URBAN - MORE THAN 25 mph TO 40 mph	250	250	250
URBAN - MORE THAN 40 mph	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1500	2640

\* - The distances are approximate, are intended for guidance purposes only, and should be applied with engineering judgment. These distances should be adjusted by the Engineer for field conditions, if necessary, by increasing or decreasing the recommended distances.

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

## TRAFFIC CONTROL SYSTEM TABLES FOR LANE AND RAMP CLOSURES

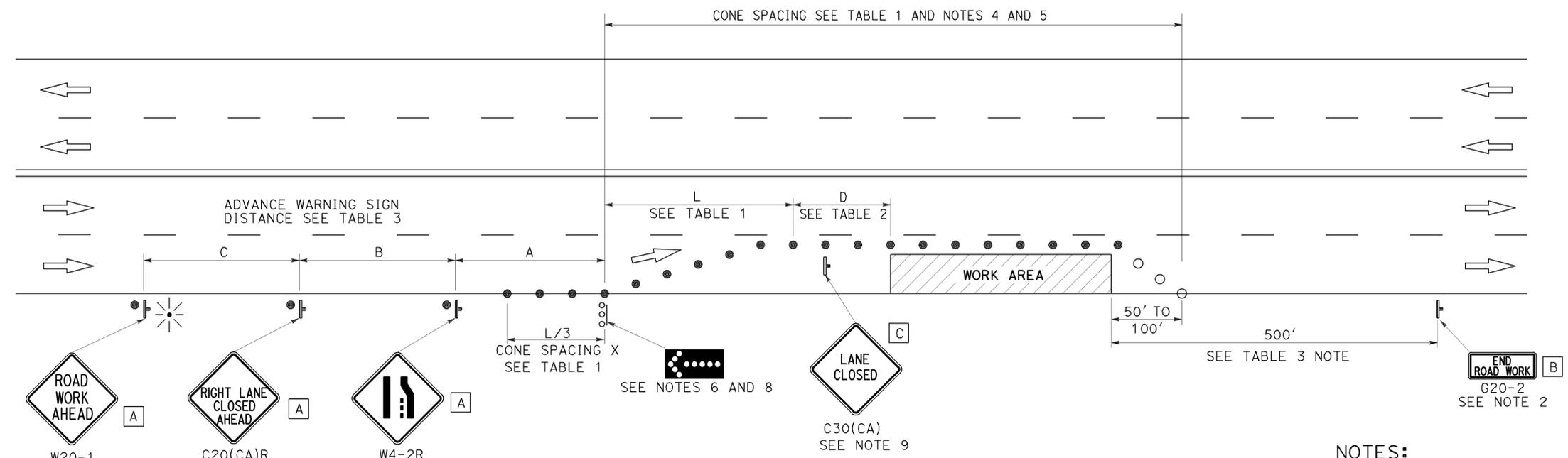
NO SCALE

RSP T9 DATED JULY 19, 2013 SUPERSEDES RSP T9 DATED APRIL 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP T9**

2010 REVISED STANDARD PLAN RSP T9

TO ACCOMPANY PLANS DATED 12-9-13



**TYPICAL LANE CLOSURE**

**NOTES:**

- See Revised Standard Plan RSP T9 for tables.
- Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.
- Unless otherwise specified in the special provisions, all temporary warning signs shall have black legend on fluorescent orange background.
- California codes are designated by (CA). Otherwise, Federal (MUTCD) codes are shown.

**NOTES:**

1. Each advance warning sign shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
2. A G20-2 "END ROAD WORK" sign, as appropriate, shall be placed at the end of the lane closure unless the end of work area is obvious, or ends within a larger project's limits.
3. If the W20-1 sign would follow within 2000' of a stationary W20-1 or G20-1 "ROAD WORK NEXT \_\_\_\_\_ MILES", use a C20(CA) sign for the first advance warning sign.
4. All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
5. Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used instead of cones for daytime closures only.
6. Flashing arrow sign shall be either Type I or Type II.
7. For approach speeds over 50 mph, use the "Traffic Control System for Lane Closure On Freeways And Expressways" plan for lane closure details and requirements.
8. A minimum 1500' of sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at the top of crest vertical curve or on a horizontal curve.
9. Place a C30(CA) sign every 2000' throughout length of lane closure.
10. Median lane closures shall conform to the details as shown except that C20(CA)L and W4-2L signs shall be used.
11. At least one person shall be assigned to provide full time maintenance of traffic control devices for lane closure unless, otherwise directed by the Engineer.

**LEGEND**

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- ⌋ TEMPORARY TRAFFIC CONTROL SIGN
- ⬢ FLASHING ARROW SIGN (FAS)
- ⊖ FAS SUPPORT OR TRAILER
- ⊛ PORTABLE FLASHING BEACON

**SIGN PANEL SIZE (Min)**

- A 48" x 48"
- B 36" x 18"
- C 30" x 30"

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**TRAFFIC CONTROL SYSTEM  
 FOR LANE CLOSURE ON  
 MULTILANE CONVENTIONAL  
 HIGHWAYS**

NO SCALE

RSP T11 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T11  
 DATED MAY 20, 2011 - PAGE 239 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP T11**

2010 REVISED STANDARD PLAN RSP T11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	53	65

REGISTERED CIVIL ENGINEER  
 Gurinderpal Bhullar  
 No. C48815  
 Exp. 9-30-14  
 CIVIL  
 STATE OF CALIFORNIA

April 19, 2013  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**LEGEND**

- TRAFFIC CONE
- ⌋ TEMPORARY TRAFFIC CONTROL SIGN
- ⬢ FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- ☀ PORTABLE FLASHING BEACON

**SIGN PANEL SIZE (Min)**

- A 48" x 48"
- B 24" x 24"
- C 36" x 18"

**NOTES:**

See Revised Standard Plan RSP T9 for tables.

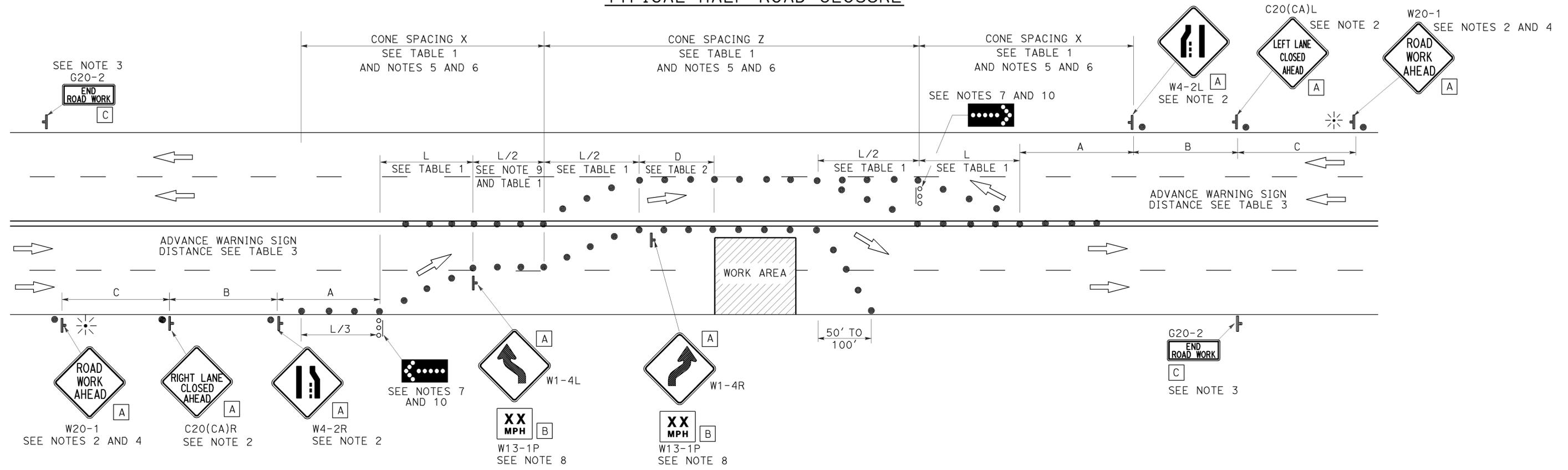
Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

Unless otherwise specified in the special provisions, all temporary warning signs shall have black legend on fluorescent orange background.

California codes are designated by (CA). Otherwise, Federal (MUTCD) codes are shown.

TO ACCOMPANY PLANS DATED 12-9-13

**TYPICAL HALF ROAD CLOSURE**



**NOTES:**

1. At least one person shall be assigned to provide full time maintenance of traffic control devices for lane closure unless, otherwise directed by the Engineer.
2. Each advance warning sign in each direction of travel shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
3. A G20-2 "END ROAD WORK" sign, as appropriate, shall be placed at the end of the lane closure unless the end of work area is obvious, or ends within a larger project's limits.
4. If the W20-1 sign would follow within 2000' of a stationary W20-1 or G20-1 "ROAD WORK NEXT \_\_\_\_\_ MILES", use a C20(CA) sign for the first advance warning sign.
5. All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
6. Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used instead of cones for daytime closures only.
7. Flashing arrow signs shall be either Type I or Type II.
8. Advisory speed will be determined by the Engineer. The W13-1P Plaque will not be required when advisory speed is more than the posted or maximum speed limit.
9. Unless otherwise specified in the special provisions, the tangent (L/2) shall be used.
10. A minimum 1500' of sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at the top of crest vertical curve or on a horizontal curve.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TRAFFIC CONTROL SYSTEM  
FOR HALF ROAD CLOSURE ON  
MULTILANE CONVENTIONAL  
HIGHWAYS AND EXPRESSWAYS**

NO SCALE

RSP T12 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T12  
DATED MAY 20, 2011 - PAGE 240 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP T12**

2010 REVISED STANDARD PLAN RSP T12

**NOTES:**

See Revised Standard Plan RSP T9 for tables.

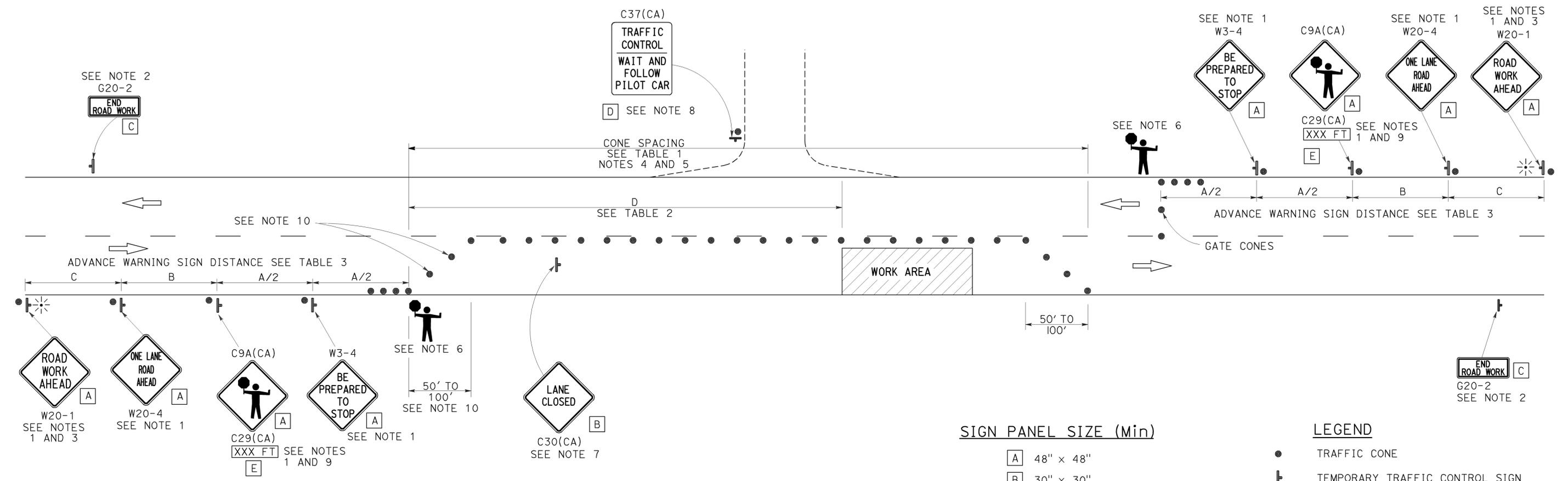
Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

Unless otherwise specified in the special provisions, all temporary warning signs shall have black legend on fluorescent orange background.

California codes are designated by (CA). Otherwise, Federal (MUTCD) codes are shown.

**TYPICAL LANE CLOSURE WITH REVERSIBLE CONTROL**

TO ACCOMPANY PLANS DATED 12-9-13



**NOTES:**

- Each advance warning sign in each direction of travel shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
- A G20-2 "END ROAD WORK" sign, as appropriate, shall be placed at the end of the lane control unless the end of work area is obvious, or ends within a larger project's limits.
- If the W20-1 sign would follow within 2000' of a stationary W20-1 or G20-1 "ROAD WORK NEXT \_\_\_\_\_ MILES", use a W20-4 sign for the first advance warning sign.
- All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
- Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used instead of cones for daytime closures only.
- Additional advance flaggers may be required. Flagger should stand in a conspicuous place, be visible to approaching traffic as well as approaching vehicles after the first vehicle has stopped. During the hours of darkness, the flagging station and flagger shall be illuminated and clearly visible to approaching traffic. The illumination footprint of the lighting on the ground shall be at least 20' in diameter. Place a minimum of four cones at 50' intervals in advance of flagger station as shown.
- Place C30(CA) "LANE CLOSED" sign at 500' to 1000' intervals throughout extended work areas. They are optional if the work area is visible from the flagger station.
- When a pilot car is used, place a C37(CA) "TRAFFIC CONTROL-WAIT AND FOLLOW PILOT CAR" sign with black legend on white background at all intersections, driveways and alleys without a flagger within traffic control area. Signs shall be clean and visible at all times. Where traffic can not be effectively self-regulated, at least one flagger shall be used at each intersection within traffic control area.
- An optional C29(CA) sign may be placed below the C9A(CA) sign.
- Either traffic cones or barricades shall be placed on the taper. Barricades shall be Type I, II, or III.

**SIGN PANEL SIZE (Min)**

- A 48" x 48"
- B 30" x 30"
- C 36" x 18"
- D 36" x 42"
- E 20" x 7"

**LEGEND**

- TRAFFIC CONE
- † TEMPORARY TRAFFIC CONTROL SIGN
- ☼ PORTABLE FLASHING BEACON
- 👤 FLAGGER

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TRAFFIC CONTROL SYSTEM  
FOR LANE CLOSURE ON  
TWO LANE CONVENTIONAL  
HIGHWAYS**

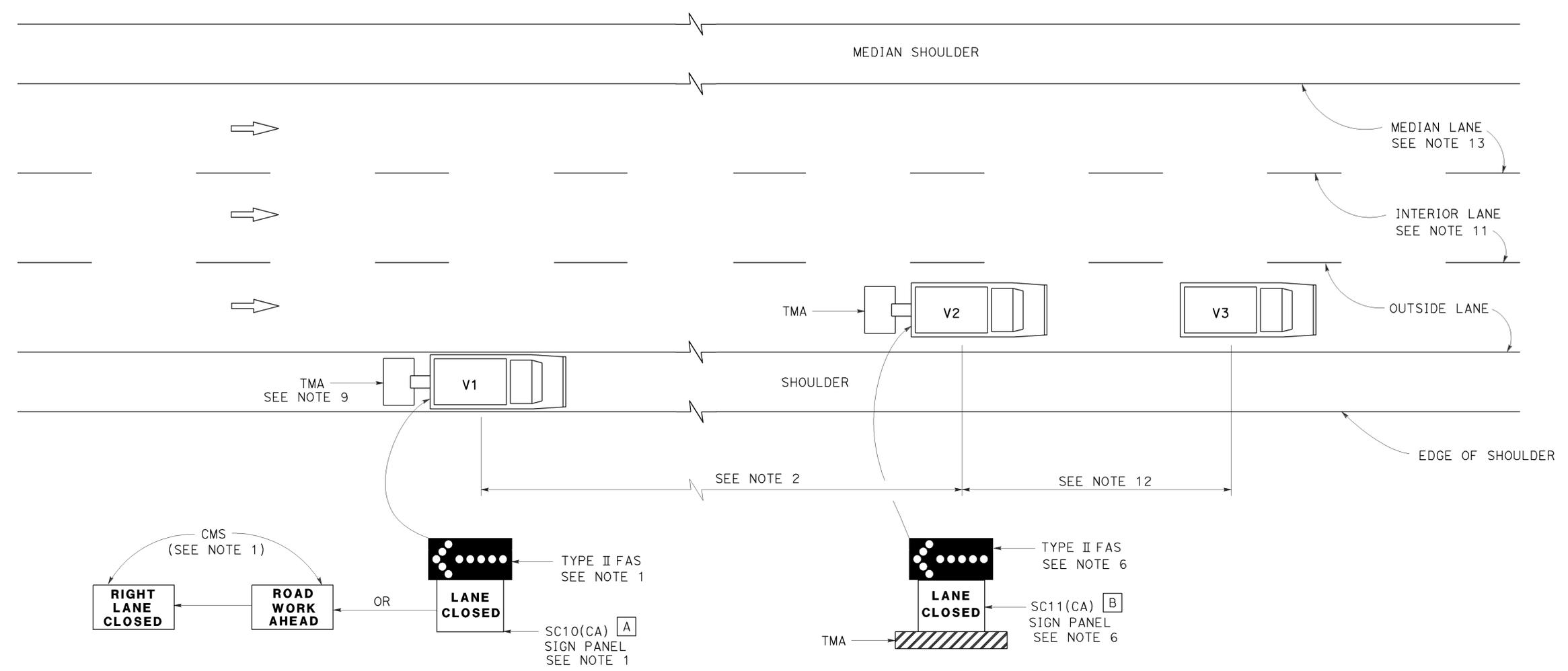
NO SCALE

RSP T13 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T13  
DATED MAY 20, 2011 - PAGE 241 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP T13**

2010 REVISED STANDARD PLAN RSP T13

TO ACCOMPANY PLANS DATED 12-9-13



**SIGN PANEL SIZE (Min)**

- A 66" x 36"
- B 54" x 42"

**LEGEND**

- V1 SIGN VEHICLE
- V2 SHADOW VEHICLE
- V3 WORK/APPLICATION VEHICLE
-  FLASHING ARROW SIGN (FAS)
- CMS CHANGEABLE MESSAGE SIGN
- TMA TRUCK-MOUNTED ATTENUATOR

**MOVING LANE CLOSURE ON MEDIAN LANE OR  
OUTSIDE LANE OF MULTILANE HIGHWAYS**

**NOTES:**

1. Either a changeable message sign or a SC10(CA) sign panel and a Type II flashing arrow sign shall be mounted on the rear of sign vehicle V1. The changeable message sign shall be sequenced to show the "ROAD WORK AHEAD" message first, followed by the "RIGHT LANE CLOSED" message. For median lane closure, the flashing arrow symbol shall be reversed with the arrowhead on the right and the changeable message sign shall show "LEFT LANE CLOSED".
2. If traffic queues develop, sign vehicle V1 should be positioned upstream from the end of queue. Sign vehicle V1 shall be positioned where highly visible when shoulders are not available.
3. A minimum sight distance of 1500' should be provided in advance of sign vehicle V1.
4. Sign vehicle V1 should remain at the beginning of horizontal or vertical curves until the other vehicles (V2 and V3) are far enough beyond the curve to resume the minimum sight distance of 1500'.
5. Vehicle-mounted sign panels shall have Type III or above retroreflective sheeting, black on white, or black on fluorescent orange, with 6" minimum series D letters per Caltrans sign specifications.
6. Shadow vehicle V2 shall be equipped with a truck-mounted attenuator. The sign panel shown and a Type II flashing arrow sign shall be mounted on the rear of shadow vehicle V2. For median lane closure the flashing arrow sign symbol shall be displayed with the arrowhead on the right.
7. All vehicles used for lane closures shall be equipped with two-way radios, and the vehicle operators shall maintain communication during the work or application operation.
8. All vehicles shall be equipped with flashing or rotating amber lights.
9. If sign vehicle V1 encroaches into the traffic lane due to insufficient shoulder width, sign vehicle V1 shall be equipped with a truck-mounted attenuator. Sign vehicle V1 shall stay as close to the edge of shoulder as practicable.
10. Where workers would be on foot in the work area, a stationary type lane closure (Revised Standard Plan T10, T11, etc., as applicable) shall be used instead of this plan.
11. For moving lane closure on interior lane of multilane highways, use Revised Standard Plan T16.
12. The spacing between work vehicle(s) and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.
13. When the work/application vehicle V3 occupies the median lane, sign vehicle V1 should drive in the median shoulder and indicate left lane closed ahead.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TRAFFIC CONTROL SYSTEM  
FOR MOVING LANE CLOSURE  
ON MULTILANE HIGHWAYS**

NO SCALE

RSP T15 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T15  
DATED MAY 20, 2011 - PAGE 243 OF THE STANDARD PLANS BOOK DATED 2010.

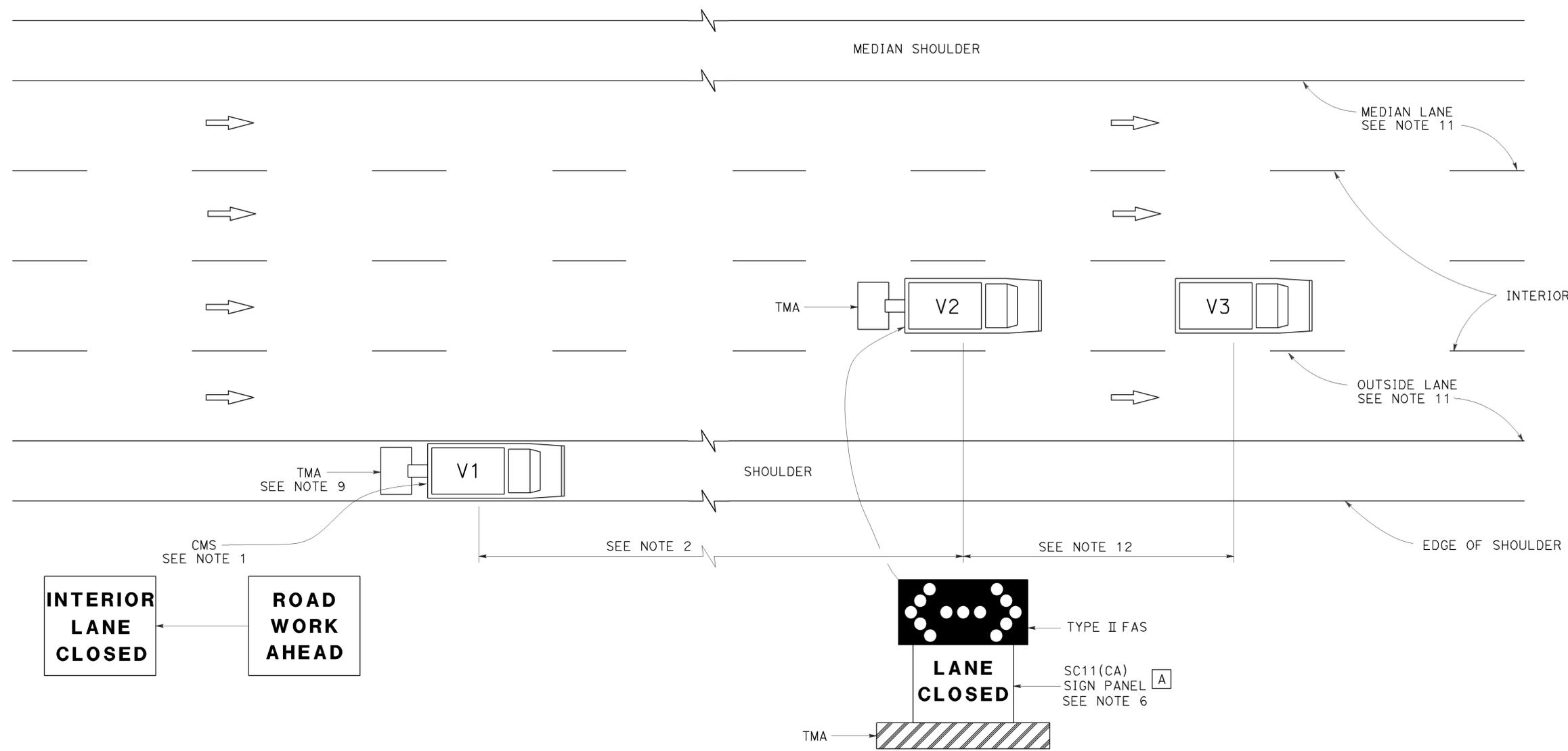
**REVISED STANDARD PLAN RSP T15**

2010 REVISED STANDARD PLAN RSP T15

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	56	65

*Gurinderpal Bhullar*  
 REGISTERED CIVIL ENGINEER  
 April 19, 2013  
 PLANS APPROVAL DATE  
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TO ACCOMPANY PLANS DATED 12-9-13



SIGN PANEL SIZE (Min)

A 54" x 42"

LEGEND

- V1 SIGN VEHICLE
- V2 SHADOW VEHICLE
- V3 WORK/APPLICATION VEHICLE
- FLASHING ARROW SIGN (FAS) IN FLASHING DOUBLE ARROW MODE
- CMS CHANGEABLE MESSAGE SIGN
- TMA TRUCK-MOUNTED ATTENUATOR

**MOVING LANE CLOSURE ON INTERIOR LANE OF MULTILANE HIGHWAYS**

NOTES:

1. A changeable message sign shall be mounted on the rear of sign vehicle V1. The changeable message sign shall be sequenced to show the "ROAD WORK AHEAD" message first, followed by the "INTERIOR LANE CLOSED" message. The message "CENTER LANE CLOSED" may be used in place of the "INTERIOR LANE CLOSED" message.
2. If traffic queues develop, sign vehicle V1 should be positioned upstream from the end of queue. Sign vehicle V1 shall be positioned where highly visible when shoulders are not available.
3. A minimum sight distance of 1500' should be provided in advance of sign vehicle V1.
4. Sign vehicle V1 should remain at the beginning of horizontal or vertical curves until the other vehicles (V2 and V3) are far enough beyond the curve to resume the minimum sight distance of 1500'.
5. Vehicle-mounted sign panels shall have Type III or above retroreflective sheeting, black on white, or black on fluorescent orange, with 6" minimum series D letters per Caltrans sign specifications.
6. Shadow vehicle V2 shall be equipped with a truck-mounted attenuator. The sign panel shown and a Type II flashing arrow sign shall be mounted on the rear of shadow vehicle V2.
7. All vehicles used for lane closures shall be equipped with two-way radios, and the vehicle operators shall maintain communication during the work or application operation.
8. All vehicles shall be equipped with flashing or rotating amber lights.
9. If sign vehicle V1 encroaches into the traffic lane due to insufficient shoulder width, sign vehicle V1 shall be equipped with a truck-mounted attenuator. Sign vehicle V1 shall stay as close to the edge of shoulder as practicable.
10. Where workers would be on foot in the work area, a stationary type lane closure (Revised Standard Plan T10, T11 etc., as applicable) shall be used instead of this plan.
11. For moving lane closure on median lane or outside lane of multilane highways, use Revised Standard Plan T15.
12. The spacing between work vehicle(s) and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**TRAFFIC CONTROL SYSTEM  
 FOR MOVING LANE CLOSURE  
 ON MULTILANE HIGHWAYS**  
 NO SCALE

RSP T16 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T16  
 DATED MAY 20, 2011 - PAGE 244 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP T16**

2010 REVISED STANDARD PLAN RSP T16

**LEGEND:**

<b>AB</b>	ABANDON. IF APPLIED TO CONDUIT, REMOVE CONDUCTORS
<b>BC</b>	INSTALL PULL BOX IN EXISTING CONDUIT RUN
<b>BP</b>	PEDESTRIAN BARRICADE, TYPE AS INDICATED ON PLAN
<b>CB</b>	INSTALL CONDUIT INTO EXISTING PULL BOX
<b>CC</b>	CONNECT NEW AND EXISTING CONDUIT. REMOVE EXISTING CONDUCTORS AND INSTALL CONDUCTORS AS INDICATED
<b>CF</b>	CONDUIT TO REMAIN FOR FUTURE USE. REMOVE CONDUCTORS. INSTALL PULL TAPE
<b>DH</b>	DETECTOR HANDHOLE
<b>FA</b>	FOUNDATION TO BE ABANDONED
<b>IS</b>	INSTALL SIGN ON SIGNAL MAST ARM
<b>NS</b>	NO SLIP BASE ON STANDARD
<b>PEC</b>	PHOTOELECTRIC CONTROL
<b>PEU</b>	PHOTOELECTRIC UNIT
<b>RC</b>	EQUIPMENT OR MATERIAL TO BE REMOVED AND BECOME THE PROPERTY OF THE CONTRACTOR
<b>RE</b>	REMOVE ELECTROLIER, FUSES AND BALLAST. TAPE ENDS OF CONDUCTORS
<b>RL</b>	RELOCATE EQUIPMENT
<b>RR</b>	REMOVE AND REUSE EQUIPMENT
<b>RS</b>	REMOVE AND SALVAGE EQUIPMENT
<b>SC</b>	SPLICE NEW TO EXISTING CONDUCTORS
<b>SD</b>	SERVICE DISCONNECT
<b>TSP</b>	TELEPHONE SERVICE POINT

**ABBREVIATIONS**

APS	ACCESSIBLE PEDESTRIAN SIGNAL	M/M	MULTIPLE TO MULTIPLE TRANSFORMER
BBS	BATTERY BACKUP SYSTEM	Mtg	MOUNTING
BC	BOLT CIRCLE	MV	MERCURY VAPOR LIGHTING FIXTURE
BPB	BICYCLE PUSH BUTTON	MVDS	MICROWAVE VEHICLE DETECTION SYSTEM
C	CONDUIT	N	NEUTRAL (GROUNDED CONDUCTOR)
CB	CIRCUIT BREAKER	NB	NEUTRAL BUS
CCTV	CLOSED CIRCUIT TELEVISION	NC	NORMALLY CLOSE
Ck+	CIRCUIT	NO	NORMALLY OPEN
CMS	CHANGEABLE MESSAGE SIGN	P	CIRCUIT BREAKER'S POLE
Ctid	CALTRANS IDENTIFICATION	PB	PULL BOX
Comm	COMMUNICATION	PBA	PUSH BUTTON ASSEMBLY
DLC	LOOP DETECTOR LEAD-IN CABLE	PEC	PHOTOELECTRIC CONTROL
EMS	EXTINGUISHABLE MESSAGE SIGN	Ped	PEDESTRIAN
EVUC	EMERGENCY VEHICLE UNIT CABLE	PEU	PHOTOELECTRIC UNIT
EVUD	EMERGENCY VEHICLE UNIT DETECTOR	PT	CONDUIT WITH PULL TAPE
FB	FLASHING BEACON	RE	RELOCATED EQUIPMENT
FBCA	FLASHING BEACON CONTROL ASSEMBLY	RM	RAMP METERING
FBS	FLASHING BEACON WITH SLIP BASE	RWIS	ROADSIDE WEATHER INFORMATION SYSTEM
FO	FIBER OPTIC	SB	SLIP BASE
G	EQUIPMENT GROUNDING CONDUCTOR	SIC	SIGNAL INTERCONNECT CABLE
GB	GROUND BUS	Sig	SIGNAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SMA	SIGNAL MAST ARM
HAR	HIGHWAY ADVISORY RADIO	SNS	STREET NAME SIGN
Hex	HEXAGONAL	SP	SERVICE POINT
HPS	HIGH PRESSURE SODIUM	TDC	TELEPHONE DEMARCATION CABINET
IISNS	INTERNALLY ILLUMINATED STREET NAME SIGN	TMS	TRAFFIC MONITORING STATION
ISL	INDUCTION SIGN LIGHTING	TOS	TRAFFIC OPERATIONS SYSTEM
LED	LIGHT EMITTING DIODE	Veh	VEHICLE
LMA	LUMINAIRE MAST ARM	VIVDS	VIDEO IMAGE VEHICLE DETECTION SYSTEM
LPS	LOW PRESSURE SODIUM	WIM	WEIGH-IN-MOTION
Ltg	LIGHTING	Xfmr	TRANSFORMER
Lum	LUMINAIRE		
M	METERED		
MAT	MAST ARM MOUNTING TOP ATTACHMENT		
MAS	MAST ARM MOUNTING SIDE ATTACHMENT		

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	57	65

*Theresa Gabriel*  
REGISTERED ELECTRICAL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

Theresa  
Aziz Gabriel  
No. E15129  
Exp. 6-30-14  
ELECTRICAL  
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED 12-9-13

**SOFFIT AND WALL MOUNTED LUMINAIRES**

- PENDANT, 70 W HPS UNLESS OTHERWISE SPECIFIED
- FLUSH, 70 W HPS UNLESS OTHERWISE SPECIFIED
- WALL SURFACE, 70 W HPS UNLESS OTHERWISE SPECIFIED
- EXISTING SOFFIT OR WALL LUMINAIRE TO REMAIN UNMODIFIED
- EXISTING SOFFIT OR WALL LUMINAIRE TO BE MODIFIED AS SPECIFIED

**NOTE:**  
Arrow indicates "street side" of luminaire.

COMMONLY USED SYMBOLS FOR UNITED STATES CUSTOMARY UNITS OF MEASUREMENT:

SYMBOL USED	DEFINITIONS
$\Omega$	OHMS
min	MINUTE
s	SECOND
bps	BITS PER SECOND
Bps	BYTES PER SECOND
A	AMPERE
V	VOLT
V(dc)	VOLT (DIRECT CURRENT)
V(ac)	VOLT (ALTERNATING CURRENT)
FC	FOOT - CANDLE
W	WATTS
VA	VOLT-AMPERE
M	MEGA
k	KILO
m	MILLI
$\mu$	MICRO
P	PICO
HZ	HERTZ

**MISCELLANEOUS ELECTROLIERS**

NEW	EXISTING	
		LUMINAIRE ON WOOD POLE
		NON-STANDARD ELECTROLIER (SEE PROJECT NOTES OR PROJECT PLANS)
		CITY ELECTROLIER
		ELECTROLIER FOUNDATION (FUTURE INSTALLATION)

- NOTES:**
- HPS luminaires shall be 310 W HPS when installed on Type 21, 21D, 30, 31 and 32 Standards, unless otherwise specified. HPS luminaires shall be 200 W when installed on other type standards or poles, unless otherwise specified.
  - LED luminaires shall be 235 W when installed on Type 21, 21D, 30, 31 and 32 Standards, unless otherwise specified. LED luminaires shall be 165 W when installed on other type standards or poles, unless otherwise specified.
  - Luminaires shall be the cutoff type, ANSI Type III medium cutoff lighting distribution, unless otherwise specified.

**STANDARD ELECTROLIER**

NEW	EXISTING	STANDARD TYPE
		15
		15D
		15 STRUCTURE
		15D STRUCTURE
		21
		21D
		21 STRUCTURE
		21D STRUCTURE
		30
		31
		32

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS  
(LEGEND AND ABBREVIATIONS)**

NO SCALE

RSP ES-1A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-1A DATED MAY 20, 2011 - PAGE 425 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP ES-1A**

2010 REVISED STANDARD PLAN RSP ES-1A

TO ACCOMPANY PLANS DATED 12-9-13

**CONDUIT**

**SIGNAL EQUIPMENT**

NEW	EXISTING	
---	---	LIGHTING CONDUIT, UNLESS OTHERWISE INDICATED OR NOTED
---	---	TRAFFIC SIGNAL CONDUIT
---C---	---c---	COMMUNICATION CONDUIT
---T---	---t---	TELEPHONE CONDUIT
---F---	---f---	FIRE ALARM CONDUIT
---FO---	---fo---	FIBER OPTIC CONDUIT
---	---	CONDUIT TERMINATION
		CONDUIT RISER ATTACHED TO THE STRUCTURE OR SERVICE POLE

NEW	EXISTING	
		PEDESTRIAN SIGNAL HEAD "C" INDICATES COUNTDOWN PEDESTRIAN HEAD
		PUSH BUTTON ASSEMBLY POST
		PEDESTRIAN BARRICADE
		VEHICLE SIGNAL HEAD (WITH BACKPLATE AND 3-SECTIONS: RED, YELLOW AND GREEN)
		VEHICLE SIGNAL HEAD WITH ANGLE VISOR
		MODIFICATIONS OF BASIC SYMBOL: "L" INDICATES ALL NON-ARROW SECTIONS LOUVERED "LG" INDICATES LOUVERED GREEN SECTION ONLY "PV" INDICATES ALL 12" SECTIONS PROGRAMMED VISIBILITY "8" INDICATES ALL 8" SECTIONS (ONLY WHEN SPECIFIED)

**SIGNAL EQUIPMENT Cont**

NEW	EXISTING	
		GUARD POST
		TYPE 1 STANDARD WITH RAMP METERING SIGN
		OPTICAL DETECTOR FOR THE EMERGENCY VEHICLE DETECTION SYSTEM

**SERVICE EQUIPMENT**

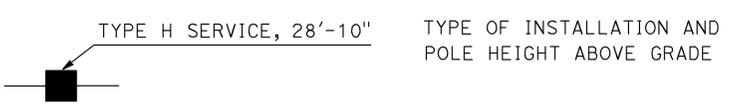
NEW	EXISTING	
---OH---	---oh---	OVERHEAD LINES
		WOOD POLE, "U" INDICATES UTILITY OWNED
		POLE GUY WITH ANCHOR
		UTILITY TRANSFORMER - GROUND MOUNTED
		SERVICE EQUIPMENT ENCLOSURE TYPE. DOOR INDICATES FRONT OF ENCLOSURE
		TELEPHONE DEMARCATION CABINET

		VEHICLE SIGNAL HEAD CONSISTING OF RED, YELLOW AND GREEN LEFT ARROW SECTIONS
		VEHICLE SIGNAL HEAD CONSISTING OF RED AND YELLOW SECTIONS WITH AN UP GREEN ARROW SECTION
		VEHICLE SIGNAL HEAD (5 SECTION) CONSISTING OF RED, YELLOW AND GREEN SECTIONS WITH YELLOW AND GREEN RIGHT ARROW SECTIONS
		TYPE 15TS STANDARD WITH VEHICLE SIGNAL HEAD AND LUMINAIRE
		TYPE 21TS STANDARD WITH VEHICLE SIGNAL HEAD AND LUMINAIRE
		STANDARD WITH LUMINAIRE AND SIGNAL MAST ARMS AND ATTACHED VEHICLE SIGNAL HEADS
		TYPE 1 STANDARD WITH ATTACHED VEHICLE SIGNAL HEADS
		STANDARD WITH A SIGNAL MAST ARM, ATTACHED VEHICLE SIGNAL HEADS AND INTERNALLY ILLUMINATED STREET NAME SIGN
		CONTROLLER ASSEMBLY. DOOR INDICATES FRONT OF CABINET

**NOTES:**

- All signal sections shall be 12" unless shown otherwise.
- Signal heads shall be provided with backplates unless shown otherwise.

**POLE-MOUNTED SERVICE DESIGNATION**



**FLASHING BEACON**

NEW	EXISTING	
		FLASHING BEACON (ONE VEHICLE SIGNAL HEAD WITH BACKPLATE AND VISOR) "R" INDICATES RED INDICATION, "Y" INDICATES YELLOW INDICATION
		FLASHING BEACON WITH TYPE 15-FBS STANDARD AND A SIGN.
		FLASHING BEACON WITH TYPES 9, 9A OR 9B SIGN UNLESS OTHERWISE SPECIFIED OR INDICATED

**ILLUMINATED OVERHEAD SIGN**

NEW	EXISTING	
		SINGLE POST, SINGLE ILLUMINATED SIGN, BALANCED BUTTERFLY
		SINGLE POST, DOUBLE ILLUMINATED SIGN, BALANCED BUTTERFLY
		SINGLE POST, SINGLE ILLUMINATED SIGN, FULL CANTILEVER
		DOUBLE POST, SINGLE ILLUMINATED SIGN
		SINGLE ILLUMINATED SIGN MOUNTED ON STRUCTURE
		DOUBLE POST, SINGLE ILLUMINATED SIGN WITH ELECTROLIER

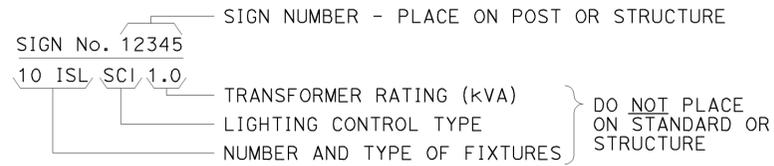
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
(LEGEND AND ABBREVIATIONS)**

NO SCALE  
RSP ES-1B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-1B DATED MAY 20, 2011 - PAGE 426 OF THE STANDARD PLANS BOOK DATED 2010.

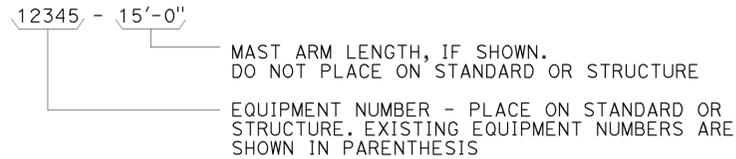
2010 REVISED STANDARD PLAN RSP ES-1B

### EQUIPMENT IDENTIFICATION

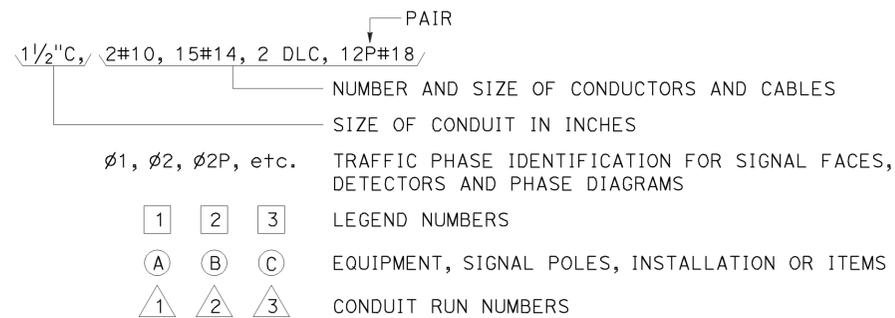
#### ILLUMINATED SIGN IDENTIFICATION NUMBER:



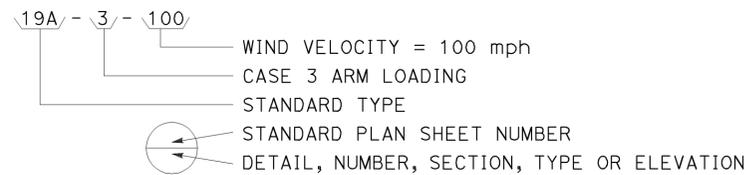
#### ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



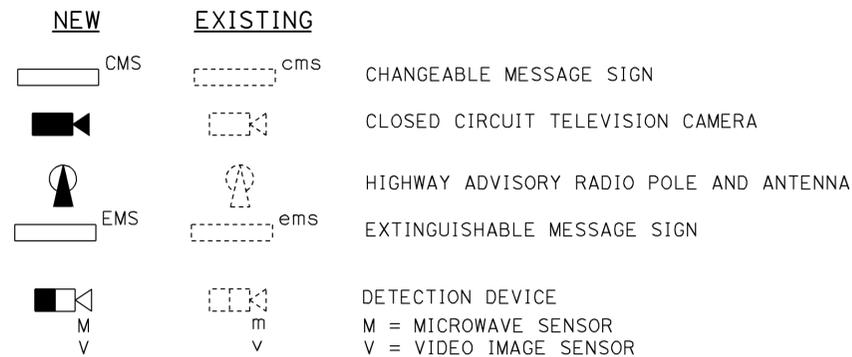
#### CONDUIT AND CONDUCTOR IDENTIFICATION:



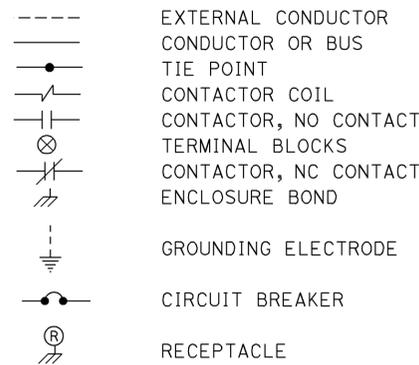
#### SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



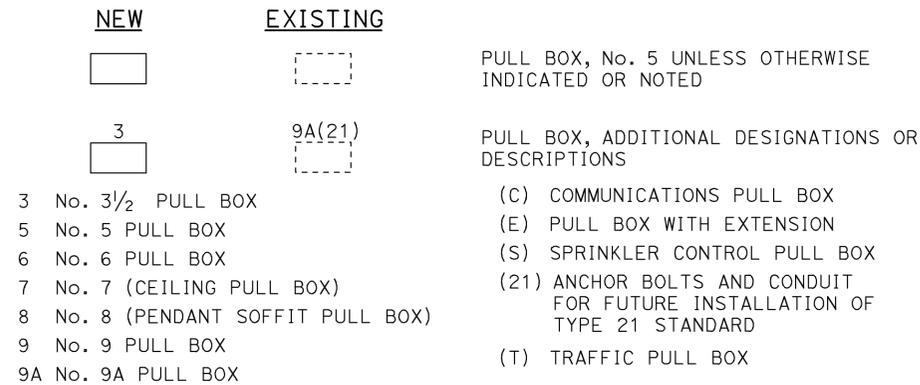
### MISCELLANEOUS EQUIPMENT



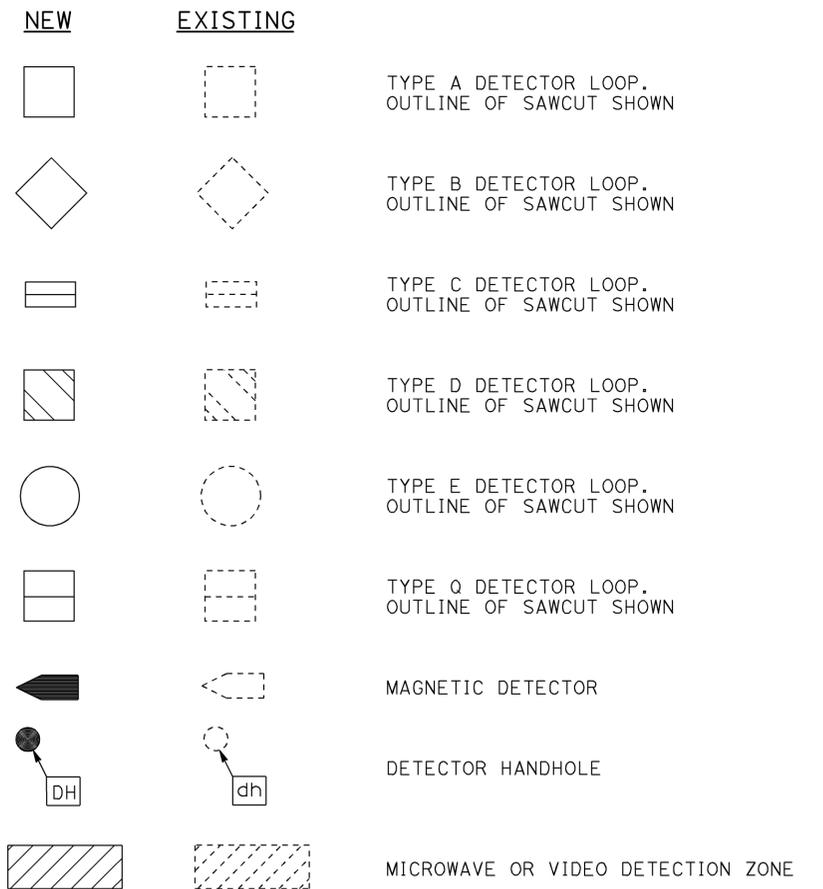
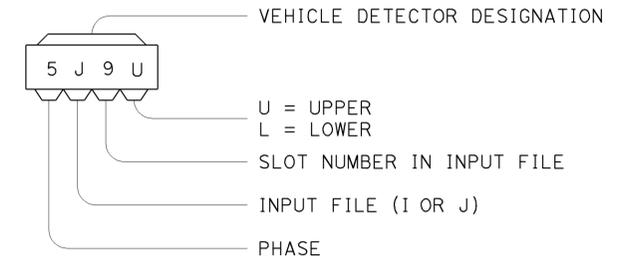
### WIRING DIAGRAM LEGEND



### PULL BOXES



### VEHICLE DETECTORS



STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

## ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)

NO SCALE

RSP ES-1C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-1C DATED MAY 20, 2011 - PAGE 427 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP ES-1C**

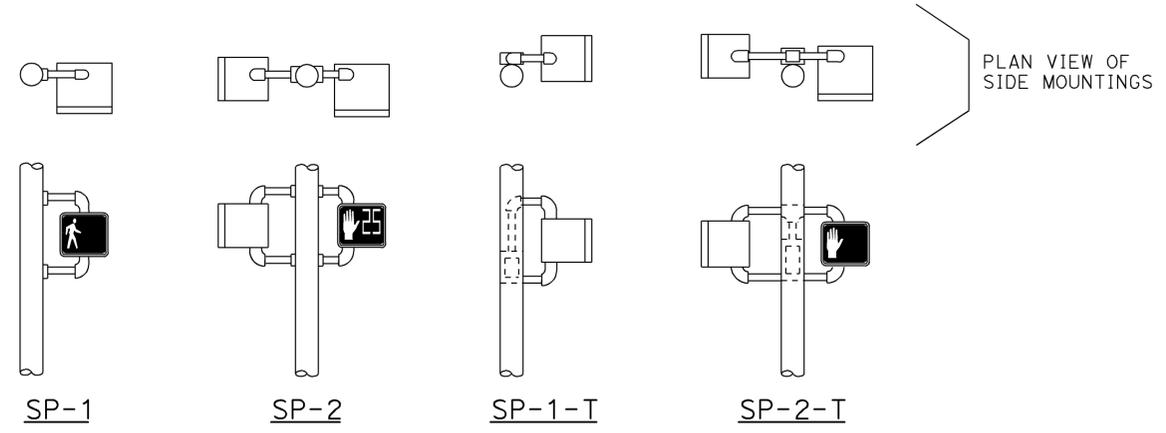
2010 REVISED STANDARD PLAN RSP ES-1C

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	60	65

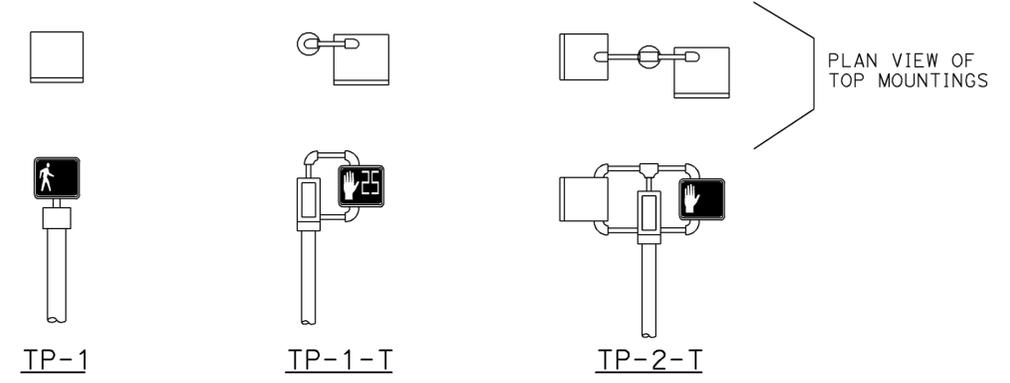
*Theresa Gabriel*  
 REGISTERED ELECTRICAL ENGINEER  
 July 19, 2013  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 12-9-13



SIDE MOUNTINGS



TOP MOUNTINGS

PEDESTRIAN SIGNALS AND MOUNTINGS

DETAIL A

NOTES:

1. Mounting shall be oriented to provide maximum horizontal clearance to adjacent roadway.
2. Bracket arms shall be long enough to permit proper alignment of signals.
3. See Standard Plan ES-4D for attachment fittings details.

ABBREVIATIONS:

- 1, 2 NUMBER OF SIGNAL FACES
- SP SIDE MOUNTED PEDESTRIAN SIGNAL
- T TERMINAL COMPARTMENT
- TP TOP MOUNTED PEDESTRIAN SIGNAL



PERSON WALKING INTERVAL      FLASHING UPRaised HAND INTERVAL      STEADY UPRaised HAND INTERVAL

PEDESTRIAN SIGNAL MODULE WITH COUNTDOWN

DETAIL B



RAMP METERING SIGN

DETAIL D



PERSON WALKING INTERVAL

STEADY UPRaised HAND INTERVAL

PEDESTRIAN SIGNAL MODULE WITHOUT COUNTDOWN

DETAIL C

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS  
(PEDESTRIAN SIGNAL AND  
RAMP METERING SIGN)**

NO SCALE

RSP ES-4B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-4B  
DATED MAY 20, 2011 - PAGE 444 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP ES-4B**

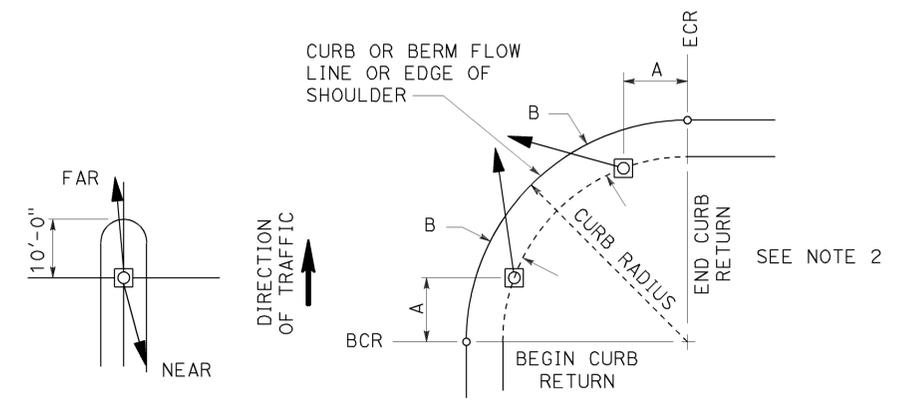
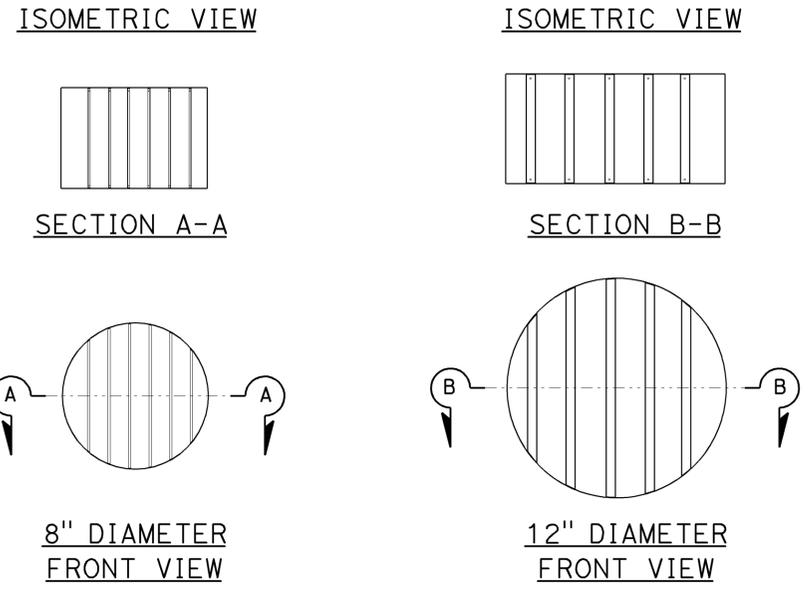
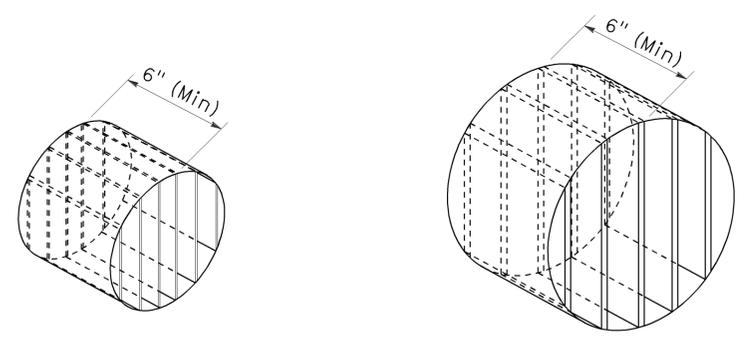
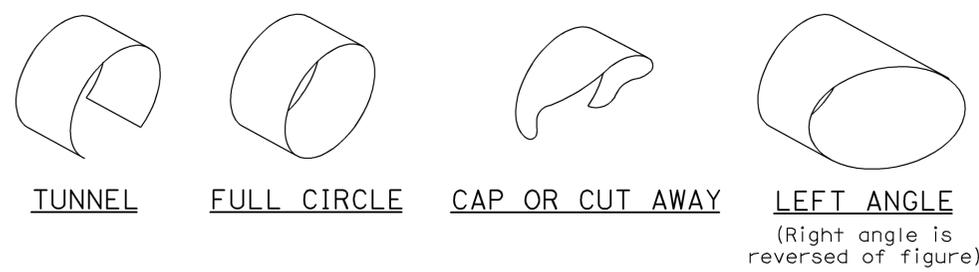
2010 REVISED STANDARD PLAN RSP ES-4B

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	61	65

Theresa Gabriel  
 REGISTERED ELECTRICAL ENGINEER  
 July 19, 2013  
 PLANS APPROVAL DATE  
 Theresa Aziz Gabriel  
 No. E15129  
 Exp. 6-30-14  
 ELECTRICAL  
 STATE OF CALIFORNIA

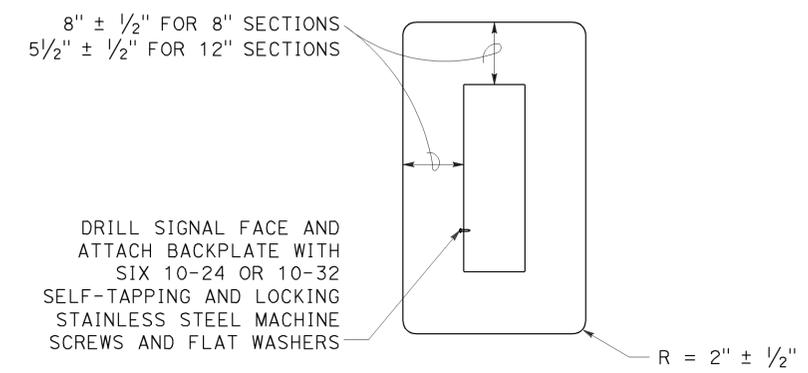
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 12-9-13



- NOTES:**
1. Typical signal pole placement unless dimensioned on plans.
  2. For A and B dimensions, see Pole Schedule, or as directed by the Engineer.

**VISORS**



**8" AND 12" SECTIONS**

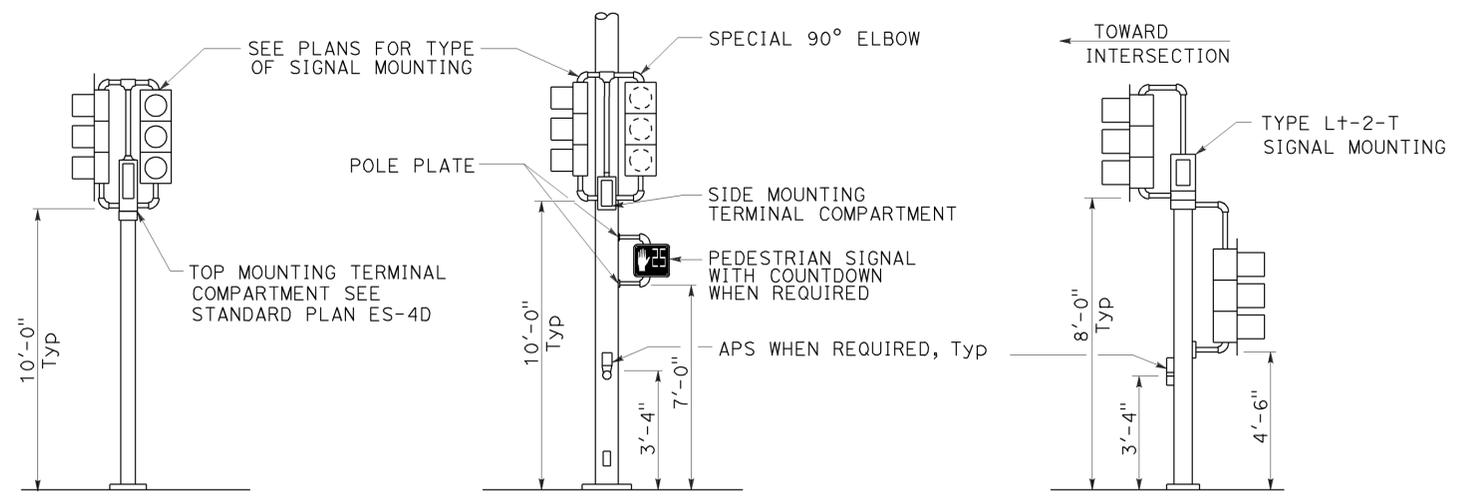
**BACKPLATE**

1/16" minimum thickness  
 3001-14 aluminum or plastic when specified

**DIRECTIONAL LOUVER**

Directional louvers shall be oriented as directed by the Engineer and secured in place with one plated brass machine screw and nut.

**SIGNAL STANDARD PLACEMENT DIMENSIONS AND EQUIPMENT LOCATIONS**



**TOP MOUNTED SIGNALS (TV)**

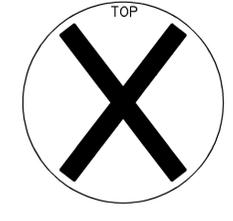
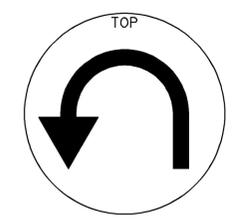
Type 1-A, 1-B, 1-C and 1-D standard as indicated on the plans

**SIDE MOUNTED SIGNALS (SV AND SP)**

Normally used on standards with luminaire or signal mast arm

**LEFT TURN LANE SIGNAL**

Type 1-A, 1-B, 1-C and 1-D standard as indicated on plans



**SIGNAL FACES**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS (VEHICULAR SIGNAL HEADS AND MOUNTINGS)**

NO SCALE

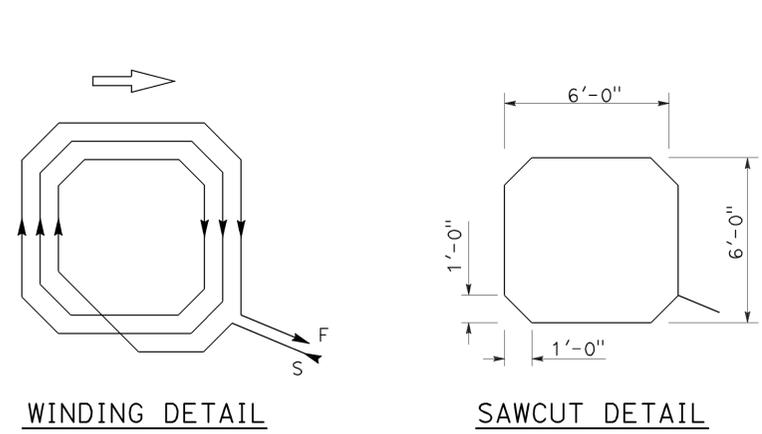
RSP ES-4C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-04C DATED MAY 20, 2011 - PAGE 445 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP ES-4C

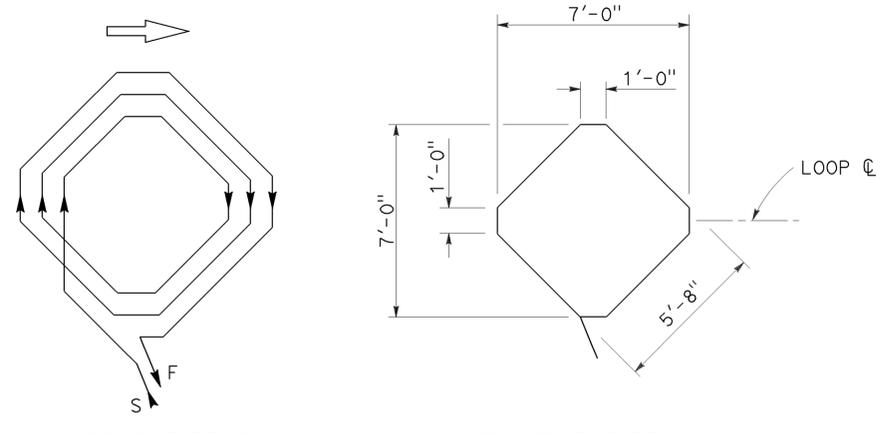
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	62	65
<i>Theresa Gabriel</i> REGISTERED ELECTRICAL ENGINEER July 19, 2013 PLANS APPROVAL DATE <small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

TO ACCOMPANY PLANS DATED 12-9-13

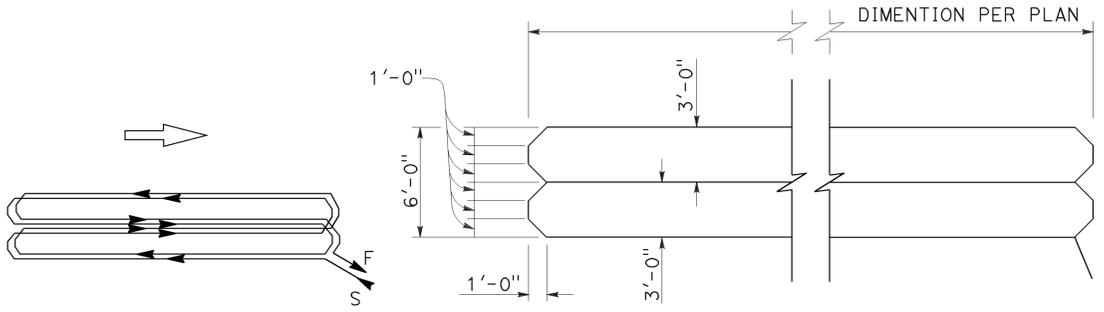
2010 REVISED STANDARD PLAN RSP ES-5B



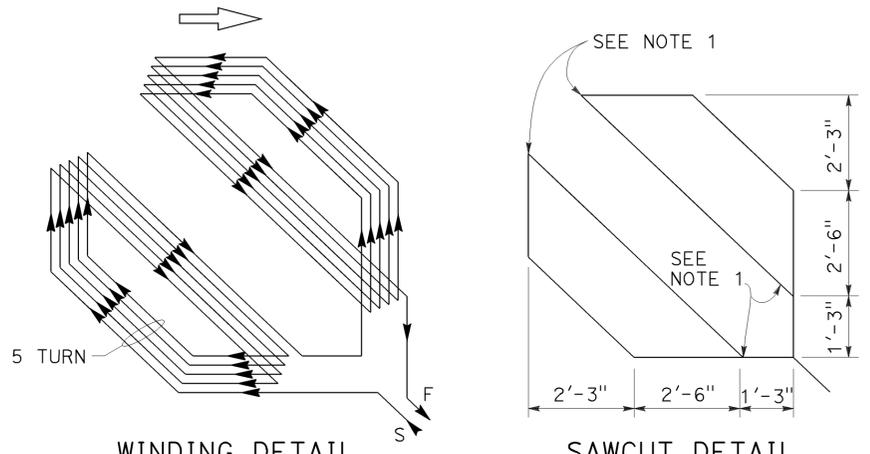
WINDING DETAIL  
SAWCUT DETAIL  
**TYPE A LOOP DETECTOR CONFIGURATION**



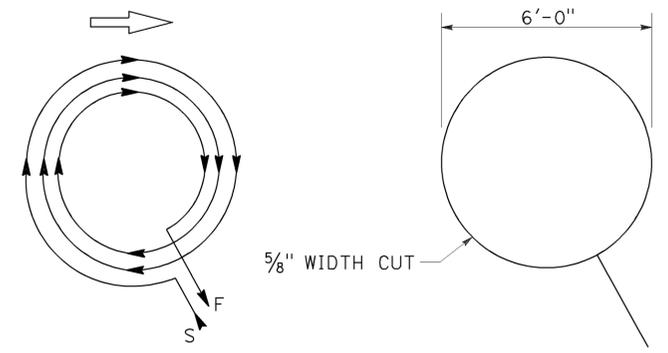
WINDING DETAIL  
SAWCUT DETAIL  
**TYPE B LOOP DETECTOR CONFIGURATION**



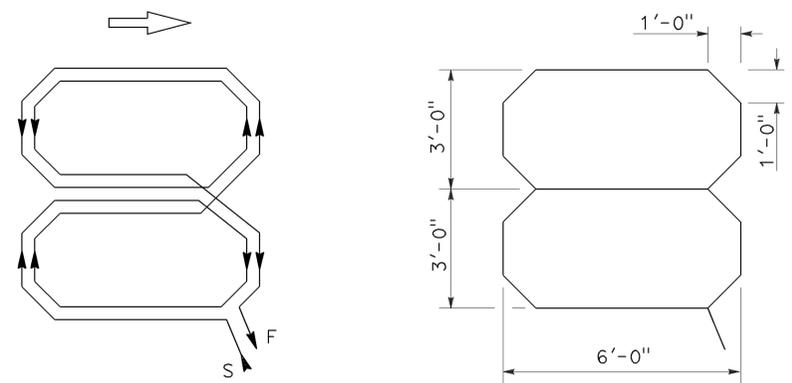
WINDING DETAIL  
SAWCUT DETAIL  
**TYPE C LOOP DETECTOR CONFIGURATION**



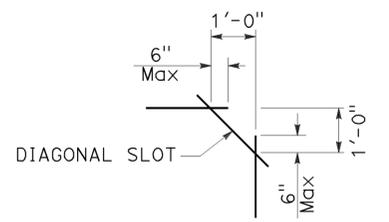
WINDING DETAIL  
SAWCUT DETAIL  
**TYPE D LOOP DETECTOR CONFIGURATION**



WINDING DETAIL  
SAWCUT DETAIL  
**TYPE E LOOP DETECTOR CONFIGURATION**



WINDING DETAIL  
SAWCUT DETAIL  
**TYPE Q LOOP DETECTOR CONFIGURATION**



**PLAN VIEW OF  
DIAGONAL SLOT  
AT CORNERS**

- NOTES:**
1. Round corners of acute angle sawcuts to prevent damage to conductors.
  2. Typical distance separating loops from edge to edge is 10' for Type A, B, D and E installation in single lane.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS  
(DETECTORS)**

NO SCALE

RSP ES-5B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-5B  
DATED MAY 20, 2011 - PAGE 449 OF THE STANDARD PLANS BOOK DATED 2010.

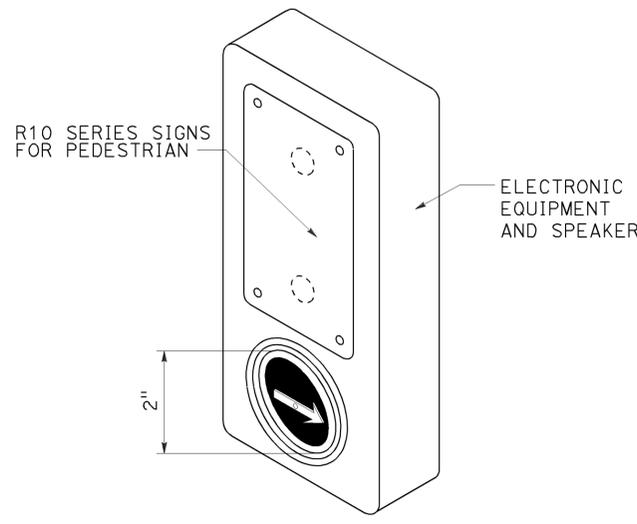
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	63	65
<i>Theresa Gabriel</i> REGISTERED ELECTRICAL ENGINEER July 19, 2013 PLANS APPROVAL DATE					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					



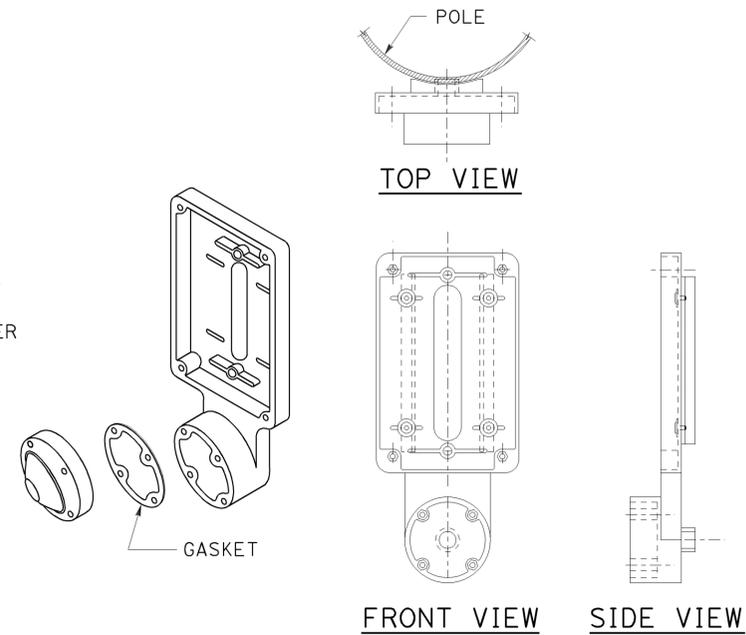
TO ACCOMPANY PLANS DATED 12-9-13

**NOTES:**

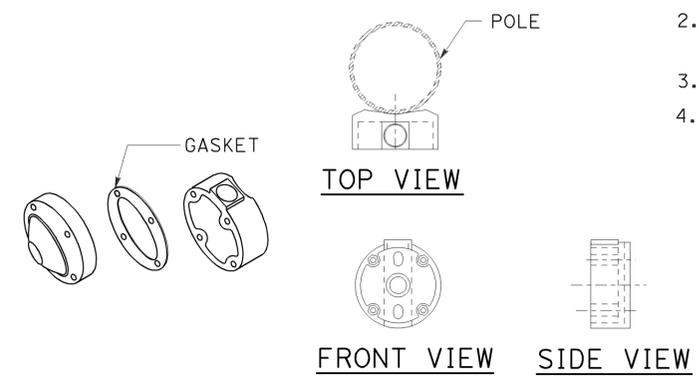
1. Back casting shape to fit curvature of pole.
2. Provide cover fitting for top of post, when PBA is mounted on push button assembly post.
3. Install push button on crosswalk side of standard.
4. Use R10 series regulatory signs and plaques for pedestrian and bicycle facilities.



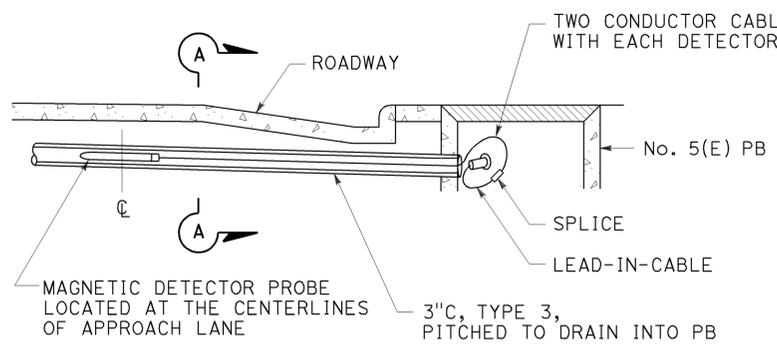
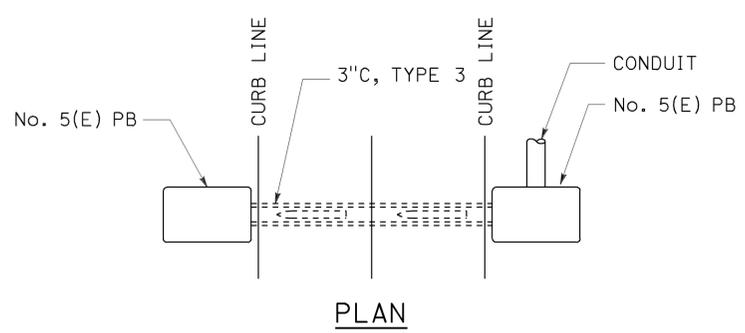
**ACCESSIBLE PEDESTRIAN SIGNAL**  
**DETAIL A**  
 (See note 1 to 4)



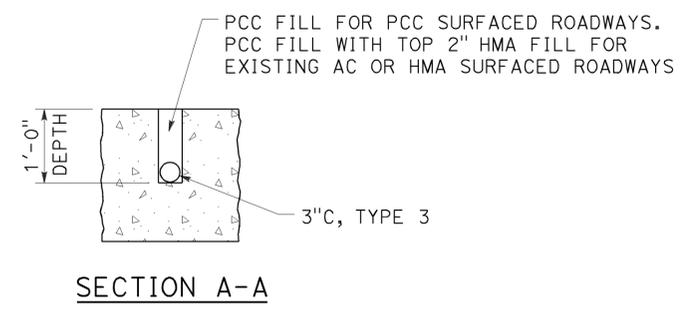
**TYPE B PUSH BUTTON ASSEMBLY**  
**DETAIL B**  
 (See note 1 to 4)



**TYPE C PUSH BUTTON ASSEMBLY**  
**DETAIL C**  
 (See note 1 to 4)



**MAGNETIC VEHICLE DETECTOR**  
**INSTALLATION DETAILS**  
**DETAIL D**



STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS**  
**(ACCESSIBLE PEDESTRIAN SIGNAL,**  
**PUSH BUTTON ASSEMBLIES AND**  
**MAGNETIC VEHICLE DETECTOR)**  
 NO SCALE

RSP ES-5C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-5C DATED MAY 20, 2011 - PAGE 450 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP ES-5C**

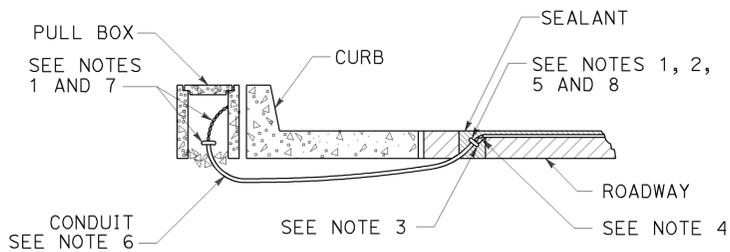
2010 REVISED STANDARD PLAN RSP ES-5C

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	138	50.0/63.4	64	65

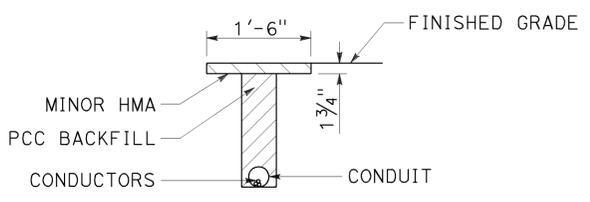
Theresa Gabriel  
 REGISTERED ELECTRICAL ENGINEER  
 July 19, 2013  
 PLANS APPROVAL DATE  
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



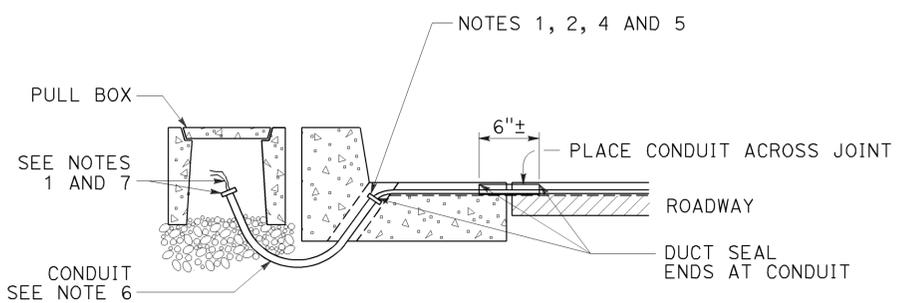
TO ACCOMPANY PLANS DATED 12-9-13



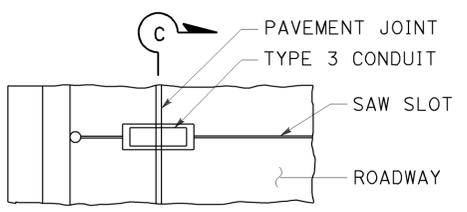
**TYPE A**  
**CURB TERMINATION DETAIL**



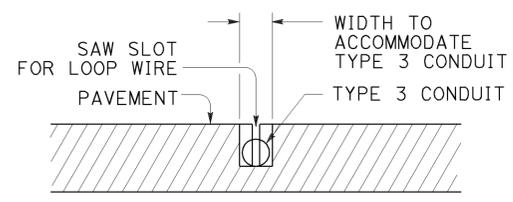
**"T" TRENCH  
DETAIL T**



**CROSS SECTION**

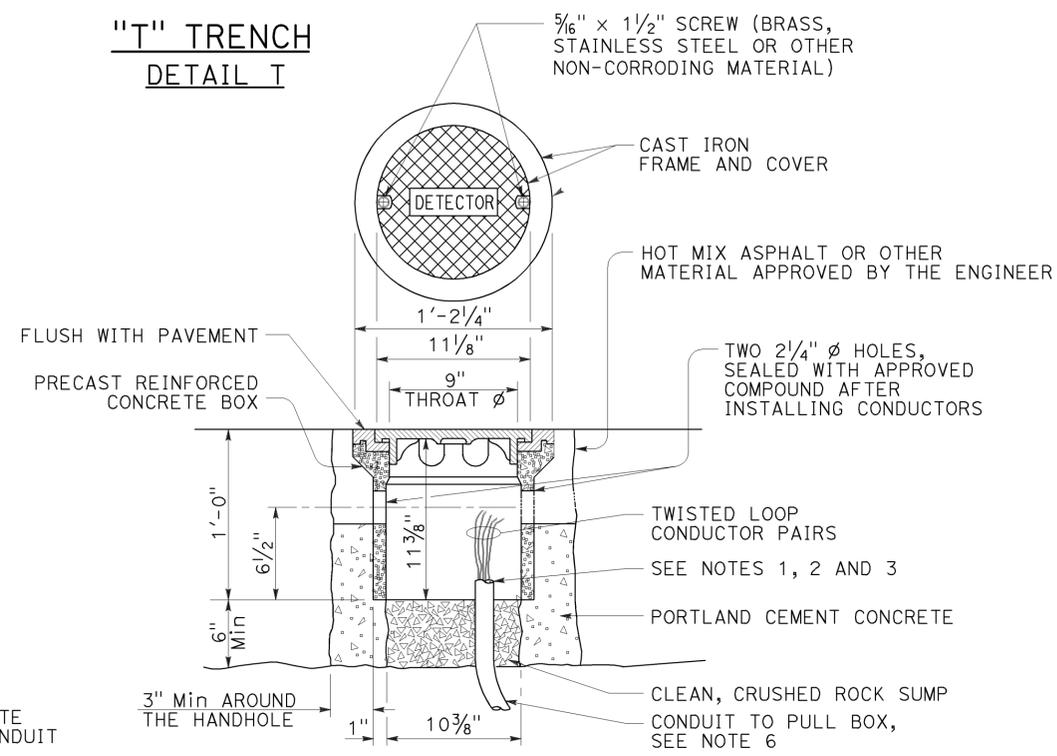


**PLAN VIEW**

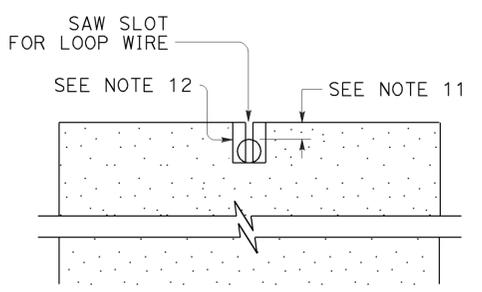


**SECTION C-C**

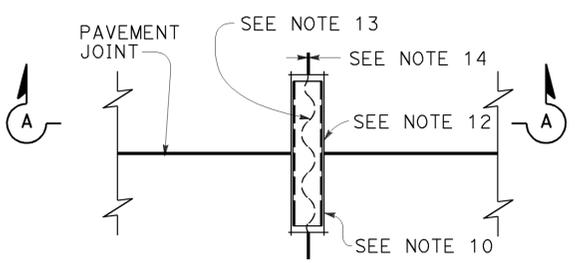
**TYPE B**  
**CURB TERMINATION DETAIL**



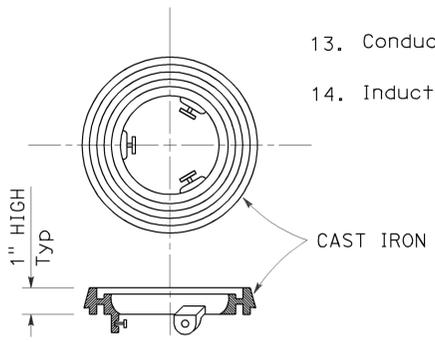
**DETECTOR HANDHOLE DETAIL**



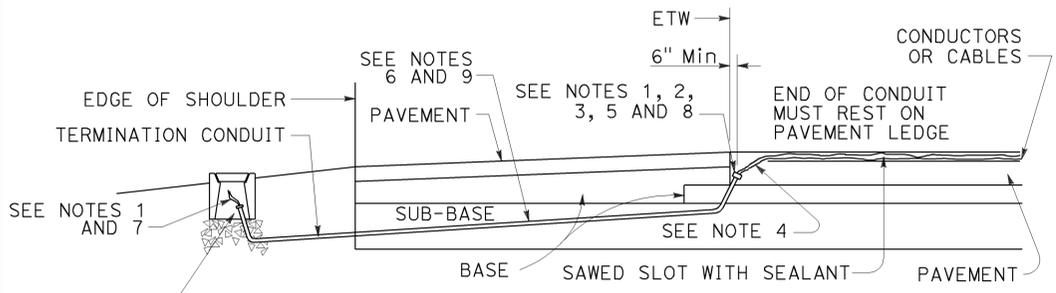
**SECTION A-A**



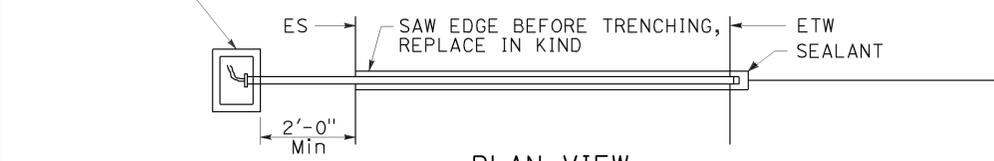
**PLAN VIEW**  
**TYPICAL LOOP LEAD-IN DETAIL  
AT PAVEMENT JOINT**



**LOCKING GRADE RING**



**CROSS SECTION**



**PLAN VIEW**  
**SHOULDER TERMINATION DETAILS**

**NOTES:**

- Bushing shall be used at end of conduit.
- Tape detector conductors or cables 3" each side of bushings.
- Install duct seal compound to each end of termination conduit before installing sealant.
- Round all sharp edges where detector conductors or cables have to pass.
- End of conduit shall be 3/8" below roadway surface.
- Conduit size      Loop conductors  
1"C minimum      1 to 2 pairs  
1 1/2"C minimum    3 to 4 pairs  
2"C minimum      5 or more pairs
- Splice detector conductors or cables to detector lead-in-cable.
- Location of detector handhole when shown on plans.
- When the shoulder and traveled way are paved with the same material and there is no joint between them, the conduit shall extend only 2'-0" into the shoulder pavement.
- 3/4"C, Type 3 conduit 6" long minimum, plug both ends with duct compound to keep out sealant.
- 1/2" Minimum between top of conduit and pavement surface.
- Sawcut shall not exceed 1" in width and 1/8" longer than conduit to be installed.
- Conductors with 1/2" minimum slack inside conduit.
- Inductive loop detector saw slot.

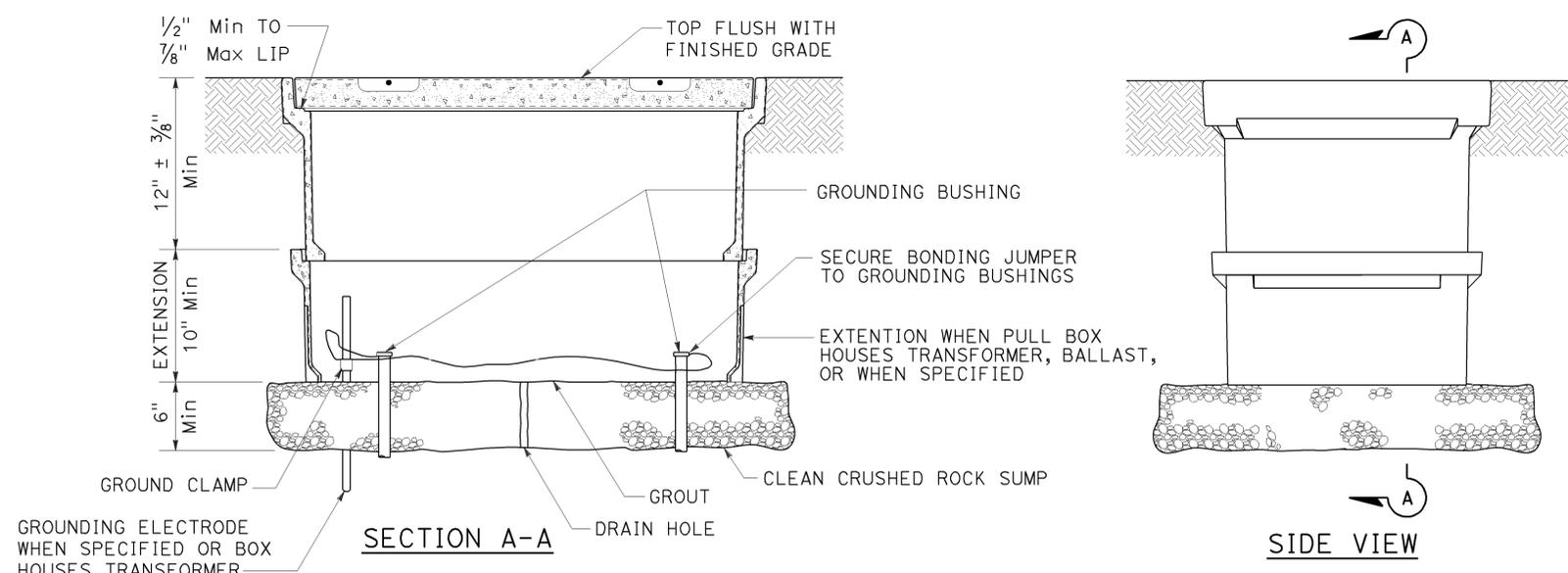
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
(CURB TERMINATION  
AND HANDHOLE)**  
NO SCALE

RSP ES-5D DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-5D  
DATED MAY 20, 2011 - PAGE 451 OF THE STANDARD PLANS BOOK DATED 2010.

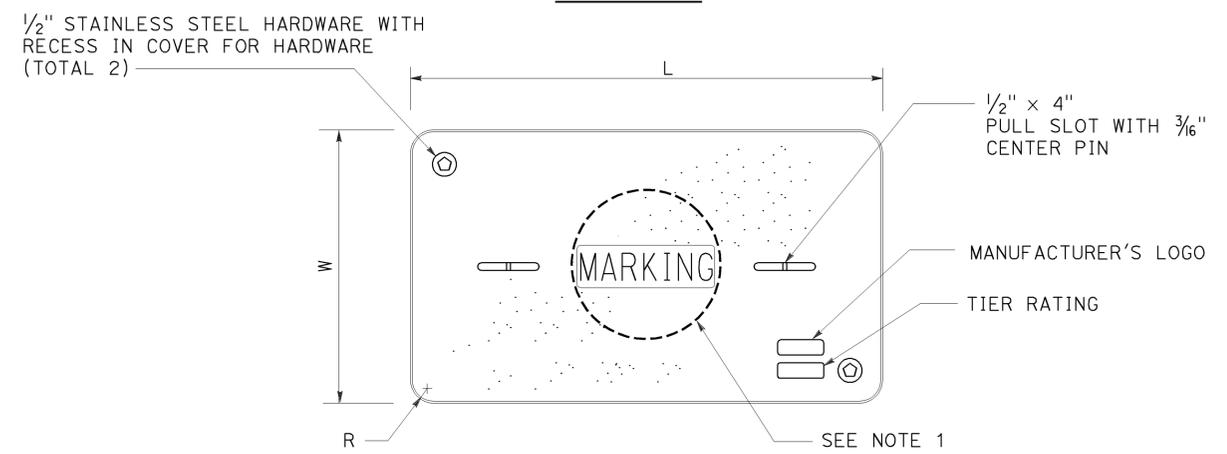
**REVISED STANDARD PLAN RSP ES-5D**

2010 REVISED STANDARD PLAN RSP ES-5D

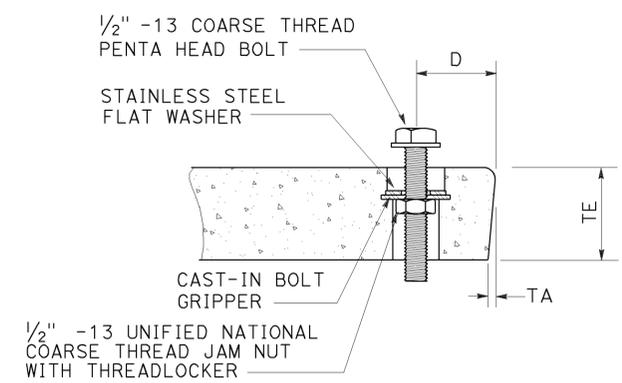
2010 REVISED STANDARD PLAN RSP ES-8A



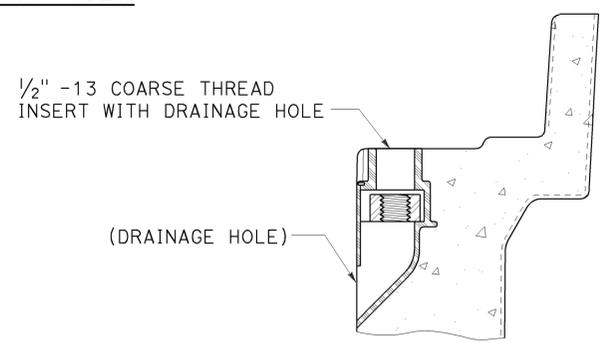
**INSTALLATION DETAILS**  
**DETAIL A**



**COVER TOP VIEW**



**TYPICAL COVER CAPTIVE BOLT**  
**OR SIMILAR**



**TYPICAL THREADED INSERT**  
**OR SIMILAR**

**NOTES:**

- Pull box covers shall be marked as follows: "SERVICE" Service circuits between service point and service disconnect; "SPRINKLER-CONTROL" sprinkler control circuits, 50 V or less; "CALTRANS" on all pull boxes, except pull boxes marked "SPRINKLER-CONTROL"; and "TELEPHONE" Telephone service;
  - No. 3 1/2 pull box.
    - "SIGNAL" - Traffic signal circuits with or without lighting or sign lighting circuits.
    - "LIGHTING" - Lighting or sign lighting circuits where voltage is under 600 V.
  - No. 5, 6, 9 or 9A pull box.
    - "TRAFFIC SIGNAL" - Traffic signal circuits with or without lighting or sign lighting circuits.
    - "LIGHTING" - Lighting or sign lighting circuits where voltage is under 600 V.
    - "LIGHTING-HIGH VOLTAGE" - Lighting or sign lighting circuits where voltage is above 600 V.
    - "IRRIGATION" - Circuits to irrigation controller 120 V or more.
    - "RAMP METER" - Ramp meter circuits.
    - "COUNT STATION" - Count or speed monitor circuits.
    - "COMMUNICATIONS" - Communication circuits.
    - "TOS COMMUNICATIONS" - TOS communication line.
    - "TOS POWER" - TOS power.
    - "TDC POWER" - Telephone demarcation cabinet power.
    - "CCTV" - Closed circuit television circuits.
    - "TMS" - Traffic monitoring station circuits.
    - "CMS" - Changeable message sign circuits.
    - "HAR" - Highway advisory radio circuits.
    - "BOOSTER PUMP" - Booster pump circuit.
- The nominal dimensions of the opening in which the cover sets shall be the same as the cover dimensions except the length and width dimensions shall be 1/8" greater.
- Covers and boxes shall be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces shall be flush within 1/8". Top outside radius of covers and pull boxes shall have a 1/8" radius.
- Pull box extension may be another pull box as long as the bottom edge of the pull box can fit into the cover opening.
- All dimensions for the cover for non-traffic pull box are nominal values.

TO ACCOMPANY PLANS DATED 12-9-13

DIMENSION TABLE										
PULL BOX	PULL BOX			COVER						
	MINIMUM DEPTH BOX	MINIMUM DEPTH EXTENSION	MAXIMUM WEIGHT	L	W	R	TE	TA	D	MAXIMUM WEIGHT
No. 3 1/2	12"	N/A	40 lb	1' - 3 3/8"	10 1/8"	1 3/8"	2"	1/8"	1 3/4"	30 lb
No. 5	12"	10"	55 lb	1' - 11 1/4"	1' - 1 3/4"	1 3/8"	2"	1/8"	1 3/4"	60 lb
No. 6	12"	10"	70 lb	2' - 6 1/2"	1' - 5 1/2"	1 3/8"	2"	1/8"	2"	85 lb

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS**  
**(NON-TRAFFIC PULL BOX)**  
NO SCALE

RSP ES-8A DATED JULY 19, 2013 SUPERSEDES RSP ES-8A DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP ES-8A**